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Annual Oration
ON
THE CAMPAIGN AGAINST SYPHILIS.

Delivered before the Medical Society of London, May 14th, 1917,

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MR. PRESIDENT AND GENTLEMEN,—With the flotsam and jetsam of the sale-room there came to my library the other day a book for the times, with the title "A Discourse of Constancy ..... written in Latin by Justus Lipsius. Containing Comfortable Consolations, for all that are afflicted in Body, or Mind. London. 1654." To have known of the "Discourse" through two admirable articles by Basil Anderton, of Newcastle,[1] gave an added welcome to Humphrey Moseley's 12mo. "in the original state."

In the dialogue the two friends discuss the miseries of the age, which had made the Low Countries almost as desolate as they are to-day, and the great Louvain Professor a homeless wanderer. To the despairing Lipsius his friend urged that "equal calamities and far greater had already fallen on the race," and that after all it was the lot of man, his destiny, and that cities and people owe their ruin "by Commission of Providence." As a tonic to their constancy they rehearse through many chapters the wonderful slaughters, the strange cruelties, the plagues and famines and rapines; and the conclusion reached was that Good comes out of Evil, and that the righteous are never forsaken. Having accepted this comfortable consolation, hard for us to read anywhere except on the title-page of the book, our neo-Stoical friends went to dinner!

THE CONQUEST OF THE GREAT INFECTIONS.

The past three years have seen the slaughter of man by man on a scale heretofore unknown except in the lively imagination of the Chronicler of the Kings of Israel. On the illustrated title-page of the little book, Fate and Necessity beam from the sky dispelling the clouds and mist, and the light of Providence shines on the figure of Constantia. To us in these dark days comes a consolation denied to Lipsius and his friend. They did not realise as we do, that it is Apollo, not Mars, who slays most in war, that nature in the form of disease is more fatal to man than man with his weapons. The needless deaths of Peace far exceed those of the most disastrous wars. More people died of plague in two years in India than have been killed on both sides since the great war began. In 1915, while nine of our soldiers abroad died every hour to save their country 12 babies died at home in the same time, to the scandal of their country.

The knowledge of nature's laws has enabled men to devise really magnificent ways of wholesale butchery; yet with a delicious inconsistency the same knowledge has taught him the science of her ceaseless warfare through disease, and has enabled him to win the greatest victory in the history of humanity. Even in war time man displays just as much hostility to a hostile nature as he does to the enemy in the field. Bitter experience has shown him that disease is more fatal than powder and shot. The new knowledge has enabled him for the first time to reverse the ratio between bacilli and bullets. Full details are not to hand for the Allied Forces, but we know that the destructive pestilences have played a minor, not as heretofore the major, rôle. And it has been the same in the German armies in which the deaths from disease have been about 1 to 15 killed and died of wounds.

The story of the conquest of the great infections is the brightest single chapter in the history of science. The humanitarian aspect appeals to our better feelings, and hopes for the betterment of the race have been centred about health and homes and habits. There is a fly in the amber of course, and the vision is blurred (narrowed, indeed, to darkness!) as one looked in two directions—towards cancer and towards venereal disease. In choosing a subject for my address I could not let the opportunity slip of lending the weight of this ancient and honourable society to anything I might say upon the great awakening that has taken place with regard to syphilis and gonorrhœa. Among infections they stand alone. Against all others man wages a keen warfare. They present the remarkable and subtle combination of man and nature in an incessant and successful propaganda against the health of the nation. The report by Dr. R. W. Johnstone to the Local Government Board, 1913, and the report of the Royal Commission embrace every aspect of the question.

STATISTICAL DATA.

I propose to touch upon only two points—the importance of the enemy and the possibility of a successful campaign. I had the inestimable advantage of early professional association with a hero-worshipper. Dr. Palmer Howard, my teacher and for ten years at Montreal my revered colleague, was a man of keen intellectual attachment. Wide-awake when the dawn appeared, he saw with remarkable clearness the immense possibilities of preventive medicine under the guidance of such men as Chadwick, Budd, Simon, Farr, Ward Richardson, Buchanan, and Russell. When not talking of Bright and Addison, of Stokes and Graves, he was lauding these men, their ways, and their works. Important literary events were the arrival of Dr. Farr's Report and the Report of the medical officer of the Local Government Board, as they furnished ammunition for the year, and it was my privilege, if not always my pleasure, to dig out statistics of the various diseases or to abstract some special article. This, you may think somewhat irrelevant, statement is preliminary to an excursion I am about to ask you to make with me, not over unpathed waters, but through the familiar pages of the Registrar-General's Report—the just-issued volume for the year 1915. Custom has not made stale the awe experienced in the contemplation of its long rows of figures, the mystery of the position of the dots, and of such new expressions as standardised rates. And let me add a warning. No author of my acquaintance has been so uniformly unhappy as myself in dealing with statistics. And I have tried so hard! But there is scarcely a percentage in my Text-book that has not been challenged, and corrected, from various sources more than once. Like Lucian, then, in introducing his Vera historia, it may be well to solicit at the outset my hearers' incredulity.

The first thing to arrest attention in Sir Bernard Mallet's big Blue-book is the absence of all reference to venereal disease in the "Review of the Vital Statistics for the Year 1915," by Dr. T. H. C. Stevenson. Of 18 causes of death specially discussed, all but three belong to the infections, of which tuberculosis, pneumonia, and cancer[2] head the list—not a word about syphilis! For the report of 1912 Dr. Stevenson prepared a special discussion for the Royal Commission on Venereal Disease, and the difficulties of the whole subject, from the statistical standpoint, were exposed. The truth is, syphilis has been, and remains, the despair of the statistician. Trustworthy data are not forthcoming. Even in death a stigma is associated with it, and the returns are everywhere but under the special caption of the disease itself. Among the 11 causes of infant mortality during the first year syphilis is not mentioned, though on p. xxii. it is twice alluded to casually—the only place in which the word occurs in the 46 pages of the review! This is no reflection on Dr. Stevenson who works with material furnished by the profession.

Where, then, do venereal diseases appear? At p. 142 (International List No. 37) syphilis is stated to have been responsible for 1885 deaths at all ages, and other venereal disease for 61. Not a very heavy bill, and of the 1885 deaths, 1162 were under a year, 1277 under five years. Of the ten best killers among the infections (exclusive of the motley group of diarrhœal diseases of children) syphilis comes last. In order of potency they are (I give the round numbers), tuberculosis, 54,000; pneumonias, 49,000; cancer, 40,000; measles, 16,000; influenza, 10,000; whooping-cough, 8000; diphtheria, 6000; scarlet fever, 2400; cerebro-spinal fever, 2000.

REDUCTION OF TYPHOID FEVER.

But, Mr. President, I cannot pass these dry figures without a digression. To find syphilis among the ten great

[1] A Stoic in his Garden, and Justus Lipsius. The Library, 1915 and 1916.

[2] I put cancer with the infections to use its mortality rates.

infections may cause surprise, but this is nothing to the astonishment at the absence of what has been in so-called civilised countries the very David among infections, typhoid fever—a paltry 1400 deaths! a rate of 35 per million. For 40 years physicians everywhere have consulted these reports for the statistics of this disease as the sanitary index of the most sanitary country in the world. Where and how was this great victory won? Where do you suppose? In a Government office—of all places! At the Local Government Board—of all places! and by a group of Government officials—of all men! by Simon, and his successors! Staff work, team-work, organised administration, have solved one of the greatest of the problems of public health.

To realise the magnitude of the victory one must have lived and moved and worked year by year in typhoid-stricken countries—helpless and hopeless without proper sanitary laws, or without the power to enforce them. To have succeeded within the memory of some who hear me in reducing the mortality of typhoid fever from between 700 and 800 per million living to the low figure 35 per million is one of the decisive battles of humanity. Conditions in this country have become so healthy that even with hundreds of thousands of recruits at the most susceptible age concentrated in camps the death-rate from typhoid disease has been the lowest in our history—and there is the added triumph of an enteric-free army in France. Inoculation has done much; but the conquest of enteric fever in this country was won by honest sanitation, carefully directed from a centre by experts, and by Government experts.

Mr. President, here, if ever, we may say with Simonides, "The State is a man's teacher," and for the benefit of the timid Ionian individualist we may add Plutarch's comment—that this lesson is only learned through many a bitter struggle and experiences. The immediate purpose of this digression will appear later in my address. Let us now return to the report.

GONORRHŒA AND RACE CONSERVATION.

Content at this stage the superficial reader will have a very erroneous idea of the position of venereal disease in the nation's life; but before going deeper into its pages let me recall a few pathological and clinical details. Among the infections gonorrhœa and syphilis stand out as the great race poisons. No other germs act in precisely the same way. The gonococcus is not a great destroyer of life; the figures given for 1915 convey the truth, only some 61 deaths. This tallies with clinical experience, as the fatal complications are very rare. But the gonococcus is the greatest known preventer of life—in fact, one of its cruel properties is to sterilise a very considerable proportion of its hosts. To realise the ravages of gonorrhœa, do not consult the Blue-books or the text-books, but study the reports of the gynæcological clinics and hospitals for diseases of women. As high as 25 per cent. of the major operations may be for gonorrhœal complications, which are among the commonest sources of chronic ill-health. Conservative estimates place the percentage of sterility in women due to gonorrhœa at 50. A large majority of these women are innocent victims of infection, often innocent infection, by husbands who thought themselves free from all traces of what they regarded as a harmless indiscretion of youth, and who could have been cured under a proper system of control treatment. Then the complicating epididymitis in the male is a common cause of sterility. One recalls the dictum of Noegerrath—the founder of our modern knowledge of gonorrhœa in the female—90 per cent. sterile women have husbands who have had gonorrhœa.

From the standpoint of race conservation gonorrhœa is a disease of the very first rank, and costs the country annually thousands of lives. With 30 to 40 per cent. of all the cases of congenital blindness, with the chronic pelvic mischief in women, and with the unhappiness of sterile marriages—with these and many minor ailments scored up against it, we may say that while not a killer, as a misery producer Neisser's coccus is king among the germs.

SYPHILIS.

The spirochæte of syphilis is easily the most notable among germs. A protozoon—it is the only protozoon, indeed, it is the only germ of world-wide dominion, irrespective of race or clime. From its well worked out biology, just two points suffice for our present purpose. The first, in some ways the most important single feature in its history, is the frequency of the transmission from parent to child. Congenital tuberculosis—how rare! Congenital pneumonia—unknown!—in fact, a killing transmission in the great infections is very rare. In syphilis it stands out less as a biological peculiarity than as a fact of supreme importance in the national health. The spirochæte may kill the child in utero, a few days after birth, or within the first two years of life, or the blighted survivor may be subject to innumerable maladies.

Stillbirths.

The stillborn are at last to be numbered. Until now they have remained the "hidden untimely births," to use the language of Job. Sir Arthur Newsholme estimates them at close upon 100,000.[3] What percentage of these deaths are spirochætal we do not know. This we do know, that syphilis is perhaps the most common cause of abortion, and that in examinations which have been made in large maternity hospitals more than 25 per cent. of the stillborn have been found infected. In this stage of big figures we can afford to be liberal, so let us reject the 80, or even the 50, per cent. of some estimates and let us put the "untimely hidden births" due to syphilis at 25 per cent. and tally them at, say, 20,000 for the year 1915.

Have we any data to justify these figures? I have looked through a great deal of literature, and was not a little pleased to find from my old hospital by far the most satisfactory information. Let me state that the obstetrical department of the Johns Hopkins Hospital was begun in a very quiet way. We put a good man in charge, Dr. Whitridge Williams, who has had first-class assistants, whole-time men, and a method of teaching which has enabled him to get a great deal of work out of his students. The result has been the output of valuable knowledge and the collection of a body of experience which bears directly upon the question before us. Of the first 10,000 cases in the clinic there were 705 fœtal deaths—i.e., from the seventh month on—7·05 per cent. In all cases the placenta was examined as well as the fœtus. "By far and away the most common etiological factor in the producing death in the fœtus is syphilis," responsible for 26·4 per cent. in the series. This, too, is a low estimate, as at least 53 of the 127 macerated fœtuses were probably syphilitic, though this could not be determined microscopically. I purposely refrain from quoting the statistics, also of 10,000 cases, of the Sloan Maternity, New York, from which the syphilitic are excluded. The small but very thoroughly worked out details of 500 cases by Dr. Siemons, of Yale Medical School, give 26 per cent. An investigation is in progress in London for the Local Government Board, and I am allowed to quote the figures to date, which give only 44 positive cases in 300—a much lower percentage than I have found elsewhere. A 20 per cent. estimate would, I think, be reasonable.

Infantile Mortality.

In 1915, of 800,000 children born, 90,000 died within the first year, the lowest number yet recorded. Add this heavy loss to the intra-uterine deaths, and it makes stock-raising for the human animal a very poor business. I have no time to discuss (but I may offer congratulations on) the efforts to lower this early death-rate by Mr. Broadbent, of Huddersfield, and by his colleagues in the great child-saving work they are doing for the nation. The reports on the physical welfare of mothers and children by Dr. E. W. Hope and Dr. Janet Campbell, just issued by the Carnegie United Kingdom Trust, will prove a boon and a blessing to sanitary workers.

Of what did these 90,000 children die? First let us note that about one-fifth of these died within the first week and a fourth within the first month. Ten causes are mentioned: whooping-cough; other common infections; diarrhœa and enteritis; premature birth; congenital defects; atrophy, debility and marasmus; developmental and wasting diseases; tuberculous diseases; convulsions; bronchitis and pneumonia; and then other causes. Again, the interest in this list centres in what is not there! Shades of Fracastorius! Syphilis is not even mentioned! When I was a pathologist and physician to an infants' home, we did not have—nor did we need!—Schaudinn or Wassermann or Noguchi to tell us of what 95 per cent. of infants died during the first month. Jonathan Hutchinson and Parrot and Diday and Fournier had told us that. The Registrar-General cannot go behind

[3] Report on Child Mortality, 1916, p. 8.

his returns, but it is worthy of comment that in Dr. Stevenson's discussion on the causes of infant mortality syphilis is only mentioned twice (p. xxii.), and that casually. When we turn to the total deaths from syphilis then we do get light, as among the 1885 deaths 1162 were under 1 year, 1277 under 5 years, but these figures are far below the mark. Careful work is in progress to determine the number of deaths within the first year from syphilis, and we shall not be far wrong in placing the figure at between 15,000 and 20,000. Dr. Helen Y. Campbell, in charge of the Bradford Infants' Clinic, reports for 1915 34·30 per cent. with the clinical features of syphilis among the 207 deaths in 3010 infants under one year.

WIDESPREAD MANIFESTATIONS OF THE SPIROCHÆTE.

The second point in the biology of the spirochæte is a peculiarity it shares with many other parasites of resting dormant in the body for years. As a rule such germs, even while retaining their virulence, do little or no damage. Not so the spirochæte, whose capacity to work evil is not to be measured by years. Since Schaudinn's great discovery there is a sharper point to Sigmund's oft-repeated aphorism, "Syphilis is the worm that never dieth." *Venus impura* is a hard mistress. Venus of the long arm she should be called, as 10, 20, 30, even 40 years from the date of infection the book bills are rendered, and she wrings the uttermost farthing out of her poor victims. One plain outcome of all recent work is that the untreated or the half-treated syphilitic is a bad life. No insurance company to-day will take a man who has a Wassermann reaction. So widespread are the manifestations of the spirochæte in the body that there is truth in the paradox I was in the habit of telling my students, Study one disease, study syphilis thoroughly and you take a knowledge of all others on the way—general medicine, nearly all surgery, and certainly all the specialties.

But I see an incredulous look on some faces, and I hear the whispered comment—'tis heard often enough! "Where is all this syphilis? It does not come my way." Yes it does. The syphilis we see but do not recognise everywhere awaits diagnosis, so protean are its manifestations. My colleague at the Johns Hopkins Hospital, Lewellys Barker, in a recent paper enumerates 19.[4] A good test of the importance of a disease is to take the 37 volumes of the two series of the Index Catalogue of the Surgeon-General's Library, Washington, in which is indexed practically all medical literature between 1880 and 1917. In Vol. XVII. of the second series issued in 1912 are 207 double-columned pages of reference, against 117 pages in Vol. XIV. of the first series in 1893. No other single disease except tuberculosis has so much space devoted to it.

Syphilis illustrates the truth of the axiom that "Men do not die of the diseases that afflict them." Look up and down the columns on pp. 138–167 of the Report, and except in the figures I have already given there is no reference to syphilis, and if from the 1885 deaths you take out 1277 before the fifth year, there is left the apparently comforting assurance of only 608 deaths among adults for the year 1915. Nothing could be more misleading.

The two-century-old conviction that syphilis was responsible for a great many internal disorders (Morgagni, 1761, and Lancisi, 1728) did not really bear fruit until the seventh and eighth decades of the last century. Fournier started the ball rolling; but it was the discussion on Erb's paper, "Syphilis and Tabes," at the 1881 London Congress that roused the profession. To the distinguished Heidelberg clinician, still more to the great syphilographer, Fournier, and to that model physician in mind and method, William R. Gowers, we owe the demonstration of the important part played by syphilis in the etiology of the chronic diseases of the nervous system. I remember the discussion as if it were yesterday, and I have re-read it with no little astonishment. And yet as the actual demonstration of to-day was lacking the clearest eyes saw but through a glass darkly and we must sympathise with an opposition which was able to bring so large a body of negative evidence against the new view. The evening after the discussion an interesting incident happened at Dr. Bristowe's house. Bouchard, Erb, and one or two others talked over the subject. Bristowe, who was a waverer, emphasised the point that many physicians had locomotor ataxia who certainly had not had syphilis. Turning to me he said: "Now our mutual friend X has surely not had it—he would have told me!" I felt sorry to have to say that I had seen our mutual friend on the continent under treatment with secondary symptoms!

The improved technique by which the spirochæte is demonstrated in the tissues and the serum reactions have opened a new chapter in our knowledge of the prevalence of the disease. The profession has read it with amazement, the sanitary authorities with bewilderment, but best of all the public is actually reading the chapter in the open!

EXAMINATION OF REGISTRAR-GENERAL'S MORTALITY RETURNS.

Let us see now what the Registrar-General can tell us about the book-bills of the Cyprian. Germs show singular preferences for different parts of the body—the tubercle bacillus for the lungs and lymph glands, the *Plasmodium malariæ* for the blood, the lepra bacillus for the skin, and the *Spirochæta pallida* for the nervous system and the blood-vessels. Of the 562,000 deaths in 1915 about 58,000 were due to diseases of the nervous system. Two of these need not detain us. Locomotor ataxia and general paralysis of the insane *are* syphilis and account for 735 and 2263 deaths respectively. Now that is as much as we can say positively about the lists on pp. 146 and 148 of the Report, but let us take the other diseases in order.

A certain number of cases of meningitis are syphilitic, but they cannot be picked out from Class C—returned as "Other forms," numbering more than one-half of the total deaths from this disease. We may leave this out altogether. After locomotor ataxia comes "Other diseases of the spinal cord," 2846 deaths, a larger proportion of them in the fourth to the sixth decades. Any neurologist would say that a reasonable estimate would take at least one-half of these—say, 1500. By far the largest single cause is cerebral hæmorrhage—apoplexy—25,423, a majority of the deaths occurring after 50, beyond which age it is the privilege of any man to rupture a blood-vessel in his brain without suspicion. 3713 of these deaths were between the ages of 25 and 50, of which 3000 could be claimed as due to syphilis. "Softening of the brain" should long ago have gone into the limbo of unused terms with "rising of the lights," but there are 1472 returns under that caption; who could deny us 500 of these? The "Paralyses without specified cause," 2983 cases, is a hopeless section, but as more than two-thirds were hemiplegia we could be given at least 500. That a certain proportion of other forms of mental alienation, 1100 deaths, were cases of G.P.I. is very probable. Judging from the studies of Leonard Finlay[5] and of Fraser and Watson,[6] epilepsy, spastic diplegias, and mental deficiency are common results of congenital syphilis. The extraordinary amount of latent neuro-syphilis in the community is well brought out by the studies of Southard and his colleagues at the Boston Psychopathic Hospital. From epilepsy, infantile convulsions, and "other diseases of the nervous system," which mount up to about 15,000, we could claim a couple of thousand at least. This gives us a total from this section of about 10,000 deaths in which syphilis is a probable cause of death.

The spirochæte attacks the vascular system in preference to all other parts, and many of the deaths noted as apoplexy and meningitis, &c., are really from blood-vessel lesions. Aneurysm, the first important internal disease to be attributed to syphilis, and the aortitis on which it depends are usually spirochætal. Between the twenty-fifth and the fifty-fifth years the cases are always spirochætal; in the young they may be embolic and in the aged atheromatous. Of the 1141 deaths we could put down 1000 to syphilis. There is a terrible bill opposite organic disease of the heart, 56,000 deaths. About 17,000 of these are between the ages of 30 and 55, and a majority of these are in men. Unfortunately, valvular disease and the myocardial cases are not differentiated from the others, nor the aortic from the mitral. For reasons to be referred to later we shall be safe in taking one-third of the cases between 30 and 55—say, 5000 at least—and we may take an equal number from the 10,000 dead of diseases of the arteries, atheroma and aneurysm. A low estimate would put the cardio-vascular deaths due to syphilis at above 10,000.

It is unnecessary to bring in the comparatively small number contributed by other organs, the liver, lungs,

[4] Medical News, Feb. 26th, 1916.

[5] Glasgow Med. Jour., 1914.

[6] Journal of Mental Science, 1913.

larynx, kidneys. We have enough to put the grand total of the ravages of the *Spirochæta pallida* above 60,000, and to move syphilis from the tenth place in the Registrar-General's Report to which it belongs—*at the top, an easy first among the infections.* Many years ago in the "Life and Death of Mr. Badman," I came across Bunyan's phrase the "Captain of the Men of Death," which "caught on" in the literature. In his day it may have been true of consumption; it is so no longer; the headship in temperate climates belongs undoubtedly to syphilis.

POST-MORTEM EVIDENCE.

It was not without reason, some of you may now think, that I entreated my hearers' incredulity. There is a hazy uncertainty about these figures, I admit, but we shall find they are understated, not overstated. So impressed have clinicians and pathologists been with the absence of clear-cut evidence that in all parts of the world investigations are in progress dealing with the incidence of syphilis in ordinary hospital work. I cannot begin to quote all the papers, but I may refer to a few just to make you feel less incredulous about the character of my claims.

Dr. Warthin,[7] one of the best known of American pathologists, whose technique is only equalled by his patience and thoroughness, investigated the tissues in a series of consecutive post-mortems with the most scrupulous care to determine the existence of the spirochæte. One-third of the autopsies in adults showed its presence somewhere in the organs. Of these 41 cases only 11 were known to have had syphilis, 5 had active lesions in the nervous system, and 25 had shown no clinical changes suggestive of syphilis. In 36 there were syphilitic lesions in the heart (spirochætes demonstrated), 32 in the aorta, 31 in the testicles, 4 in the liver, and 6 in the adrenals. He concludes that interstitial myocarditis, aortitis, and fibrous orchitis form a triad distinctively spirochætal. The material from which this study was made represents an average intake of a hospital supplied largely from the country and from smaller towns of the State of Michigan. It would be interesting to repeat in one of the large London hospitals a similar study in 500 bodies, though the prolonged and tedious character of the work makes it almost impossible unless a special staff (after the war) could be appointed. It is the type of work that carries conviction, as the parasites are demonstrated in the lesions.

THE WASSERMANN REACTION.

The other method of inquiry does not carry the same weight. Not that the Wassermann reaction is not a satisfactory test of the presence of syphilis, but the technique is delicate and beset with difficulties that may vitiate the results. I will only refer, then, to studies made under the control of men I know, and with as great care as possible to perfection of the technique. C. H. Browning's paper[8] gives many details from English and Scotch sources.

My native country has a Conservation Commission which deals with everything from babies to beavers. I do not know the circumstances under which the Commission called for a report on the prevalence of venereal diseases, but they asked the members of the staff of the new Toronto General Hospital to undertake the work, and their report just issued (Jan. 17th, 1917) deals with all aspects of the problem. The point of interest here is that from 12 to 14 per cent. of patients admitted to the hospital show serological reactions characteristic of syphilis. In 60 per cent. of these persons the disease was not suspected. That the observations were made by Dr. Detweiler in the laboratory of Professor J. J. Mackenzie is a sufficient guarantee of the character of technique carried out.

The Brigham Hospital, Boston, is a new research hospital on the most advanced lines. Of 4000 patients examined by Walker and Haller,[9] 600 had been infected—15 per cent. Here again the latent cases far outnumber the active. In Baltimore Dr. George Walker, a well-known specialist, examined 1080 patients, 10 per cent. of whom gave the reaction. Of 327 prostitutes, 67 per cent. were infected.[10] Dr. John H. Musser, jun., reports that the examination of cases at the University Hospital, Philadelphia, gave 14 per cent. with the specific reactions for syphilis.

[7] American Journal of the Medical Sciences, 1916.
[8] Brit. Med. Jour., 1914, i.
[9] Journal of American Medical Association, 1916, 1.
[10] Ibid., lxxvi., 1738.

I know there are those who look askance at the results of the Wassermann reaction which has not, and does not claim, mathematical accuracy, and it is a test on which much depends in the personal skill and honesty of the pathologist. These figures, from sources well known to me personally, may be trusted as far as one can such slippery articles. Modern research everywhere leads to three conclusions: (1) that there is an immense body of latent syphilis in the community; (2) that a very large number of persons have not been thoroughly treated; and (3) that to the enormous groups of cerebro-spinal and cardio-vascular deaths syphilis is an all-important contributor.

GROWTH OF CAMPAIGN AGAINST VENEREAL DISEASES.

The discovery of the spirochæte in 1905 gave an enormous impetus to the study of syphilis, while the improved treatment announced by Ehrlich in 1910 aroused hopes that at last—with the cause known and the cure assured—we had in our hands weapons for an effective fight. The public and its incorporated activities, the State, had persistently ignored its existence. Centuries of silence had made venereal disease taboo. Press and pulpit alike ignored the unsavoury subject. I doubt if the word syphilis occurs in the index of the *Times* until 1910, when a brief announcement of Ehrlich's discovery was made. Venereal diseases are rarely mentioned until the recent Commission, though, of course, a great deal of discussion took place upon the Contagious Diseases Acts History repeats itself. Imperial Rome is said to have been one huge brothel, in which sexual diseases were rife, though whether syphilis was one of them we do not know. The bibliophile Jacob (Paul Lecroix, who is also Pierre Dufour of the great work on prostitution) calls attention[11] to the hesitancy with which the Latin writers, medical and lay, refer to the *morbus indecens*, or, indeed, to any sexual disorder. To the rapid increase of venereal disease in them he attributes the appointment of State physicians by Nero.[12]

The beginning of the twentieth century saw us in a condition of hopeless apathy. Within a decade what a changed attitude in profession and public! You, Mr. President, started the former by the issue of your six-volume "System of Syphilis," which has proved such a useful armoury. Dr. Johnstone's report was an "eye-opener." The Royal Commission appointed in 1913 gave practical expression to a realisation of the importance of the problem by the public. Best of all, Lord Sydenham's report has not been sterile, as is so often the case with Royal Commissions. The rapidity with which it fertilised the House of Commons is unparalleled in the history of even that prolific lady. An outcome, too, of the work of the Commission was the founding in 1914 of the National Council for Combating Venereal Diseases, the primary function of which is educational. Under the wise guidance of Sir Thomas Barlow the Council has provided accurate and enlightened information to the public, and has

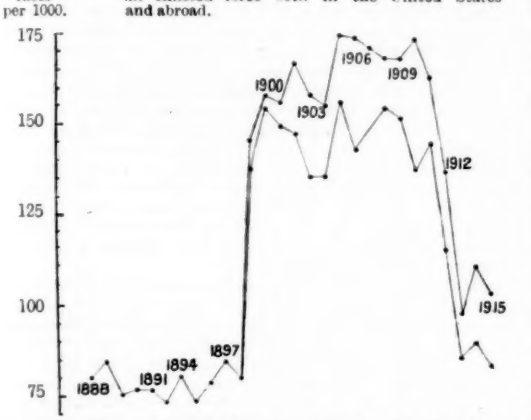
[11] Recherches Historiques sur les Maladies de Venus, Bruxelles, 1883.
[12] The question of the existence of syphilis in Graeco-Roman times has been re-opened with the proof of the presence of the disease in Europe before the discovery of America. I have asked Mr. Warde Fowler, the well-known authority in Roman social life, what he thinks of the bibliophile Jacob's statement. His reply is worth quoting:—"In my judgment the question depends on the evidence of Celsus entirely; all the rest which Jacob adduces is vague and indirect, and apt to give way when you probe it. For example, he makes a great point of slave doctors kept in big establishments, who would keep unpleasant diseases secret, and so on. I have looked up the evidence about these, and there is nothing more in it than that in a few very big establishments it was convenient to have a doctor on the spot, as in a big ship. The economy of those big households or farms was self-sufficing, in this as in other ways. And it was far from universal even in large farms, for Varro expressly says that farmers preferred to use the doctors of the neighbourhood. Again, he quotes St. Augustine for the Syrian luxury that came to Rome in the second century B.C., and jumps to the conclusion that all kinds of evil diseases came with it. That may have been so, but it does not come out of Augustine's words; and I am pretty sure that if Augustine had wanted to say so, he would have said it without any scruple. But, on the other hand, supposing that the passage quoted from Celsus distinctly points to syphilis or something like it, the fact that there is no mention of such things in Roman literature would not be enough to damage Celsus's evidence. What survives of Roman literature is mostly clean and in good tone, and one would not expect to find any such allusion in it. The absence of any allusion in certain poems of Catullus, and in the great passage about love at the end of the fourth book of Lucretius, might suggest that one should be careful about interpreting Celsus, but would by no means be decisive. (I have just been over the Lucretius passage, and can find no trace of allusion to a morbus; and L. was very plain-spoken in such matters.) So I think that you must go by Celsus alone. Apart from him I should say there is no evidence of any weight, positive or negative." The difficulty with Celsus is a matter of interpretation. The lesions described are not necessarily sexual.

been a rallying centre for the various professional bodies interested in the subject. The work of the Eugenic Education Society under Major Darwin has been most helpful.

The outset of the great war has stimulated, not retarded, the plan of campaign. Since that memorable scene which shook the gods in Olympus with inextinguishable laughter Venus and Mars have been inseparable. War means an enormous increase in the number of infections. The last quoted figures for the British Army at home are (Hansard, April 23rd): 71,000 cases of gonorrhœa, 21,000 cases of syphilis, and 6000 cases of soft chancre. In the Canadian Army to March 31st, 1917, there have been 18,335 cases of venereal disease—figures which have stirred public opinion in the Dominions to the boiling point.

LEGISLATIVE ACTION.

Stricter prophylaxis should reduce these figures. I have had from Colonel Bradley, U.S.A., and Major Lyster, U.S.A., now stationed in England, the full details of the methods now carried out so successfully in the United States Army. The annexed chart speaks for itself:—



1888-98.—During this decade the Army was stationed throughout the United States principally at small posts. No compulsory physical inspection; no systematic propaganda to reduce venereal disease. The rates represent practically those patients unable to do duty. Cases not treated or those doing duty were usually not recorded.
1898.—Spanish War. Militia called into service.
1898-99.—Great change in Army; marked expansion. Old soldiers disappear; volunteers come in. Young recruits sent to Cuba, Porto Rico, Philippines.
1899-1901.—Philippine Insurrection. Troops in Cuba, Porto Rico, China.
1901-09.—High rates prevail in United States and abroad.
1909-11.—Principles of preventive medicine applied; prophylaxis urged.
1911.—Syphilis increases. Wassermann test used in diagnosis.
1912.—Systematic measures. Fortnightly physical inspections and prophylaxis enforced by G.O., May 31st. Pay stopped, G.O. 31.
1914-15.—Concentration on Mexican border.

Various stimuli, public and private, have had at last the desired effect. The Government felt that opinion in the country was strong enough to act on the advice of the Commission and hand over the venereal problem to the public health authorities represented by the Local Government Board. The most sensible single bit of evidence given to the Commission was expressed by the Hon. Miss Brodrick, a trained nurse, that we should deal with the disease "as if it were small-pox or scarlet fever, simply as a disease quite apart from the moral side." This is what the Government has done. Recognising the existence of the disease as a great menace to public health, legislation has been enacted to fight the enemy on a settled plan at many centres under the control of the Local Government Board. It is a new departure to deal with an individual disease in this way.

What a change a single word may effect! Tuberculosis, the white plague, is really a more hopeful disease to fight than syphilis. Though it has the same strong allies, poverty and drink, there is absent the complicating problem of prostitution. The word "may" instead of "shall" in the Tuberculosis Act gave us an ineffective guerilla warfare of local bodies for a Kitchener and a general staff. The Government made no mistake this time—*shall* is the word, and all over the country the clinics are in course of formation. Nurtured upon the Reports of the Local Government Board, I dwelt with a purpose on the successful campaign which it had waged against typhoid fever. In that great warfare Sir John Simon was chief of staff, and the battle was won by able lieutenants who directed the actual fighting in various parts of the country. Read the story in his writings, and you will wonder how it ever could have been accomplished, against the opposition of Dogberrys inside and outside the House. Had the country listened to Sir John Simon half a century ago, when he advocated the "urgent need of control of the public health by a responsible Minister of State," our arrears in infant mortality and housing would not now be so heavy. Still, let us be grateful to him and to his successors for all the good work that has been done.

ESTABLISHMENT OF VENEREAL CLINICS.

No more hopeful legislation has ever been enacted than the establishment of these venereal clinics, with which the country will be equipped, though not fully, for the battle. But let the people and their representatives realise that they are dealing with the subtlest foe of humanity and the greatest sanitary problem which confronts civilisation. A general staff, controlling the campaign, will work from the Local Government Board (or before long, let us hope, from a Ministry of Health[13]) with laboratory, statistical, and social service departments, a publicity bureau and a library. The centres will be units working with a single object, and the doctors, nurses, and social workers will be members of a great national army.

Already the Commission—for it is its work—has done what the profession has not been able to do in these long years—opened the doors of the general hospitals to these victims. The governors and trustees have lined up at last with the good Samaritan. There are many institutions in which an up-to-date scientific clinic with laboratories will be a great boon. The profession welcomes the scheme from the educational side, as there will be within easy reach opportunities for the study of all aspects of both disorders, and from the practical side they will be able to bring their patients freely for special treatment, for special consultation, and for the laboratory tests which are so essential. There will, I hope, be at each centre lectures and demonstrations as have been organised in Liverpool. A sympathetic and loyal feeling on the part of the practitioners in each district is really essential to the success of the work.

Between the clinical and the laboratory side there will be enough at each clinic to occupy a large part of the time of a male and female doctor, who will, I trust, become the skilled advisers of the profession and of the public in each district. It should be our business to make these positions sufficiently attractive to catch the very best, and I am sure the hospital authorities will welcome them warmly as members on the staff. In large cities they might well be whole-time positions, though I should prefer to allow their colleagues and the public to have the benefit of their ever-increasing experience. A great missionary field will be opened for women doctors, who should do the work among their own sex at the clinics.

EDUCATION OF THE PUBLIC.

Nowadays, in the hospitals the individual is studied and cared for, not solely his or her disease. Social workers of the right sort with the right spirit, the helpful sympathetic spirit which—

> "Gently scans your brother man,
> Still gentlier sister woman,"

will do much to make the clinics known and appreciated. The National Council could very well supervise this work which should be done by carefully selected volunteers. The clinic should be the centre in each district of an active educational propaganda which should be stimulated and planned by the general staff, and not left to the timid discretion of the local authorities. By meetings, literature, placards—in every legitimate way—a knowledge of the dangers of venereal disease should be distributed, and the importance of early and thorough treatment insisted upon. The public lavatories, the toilet-rooms of restaurants,

[13] The Waldorf Astor Report just issued, "The Health of the People: a New National Policy," should give a great stimulus to the unification of the many departments at present dealing with public health.

railway stations, hotels, and factories should be utilised in a crusade against advertising venereal quacks. The stage should be used actively, and such a play as Brieux's "Damaged Goods," while strong meat for the *young*, enforces on young men the lesson of the terrible risks better than the chapters in *Proverbs* or than any number of leaflets.

In every possible way the sympathetic coöperation of the public is to be sought. Get people to realise that it is a great communicable disease two-thirds of the victims of which are innocent, and much will be done to break down the present barriers of ignorance and false sentiment. For any legislation to be successful the people must be prepared. The problem bristles with difficulties, but the primary duty is to gain the confidence of the public and respect their feelings so far as they are consistent with the welfare of the State.

UNQUALIFIED TREATMENT.—NOTIFICATION.—COMPULSORY TREATMENT.

We are committed, then, to a campaign of education, and an elaborate scheme of treatment. Two circumstances make it probable that these measures—and a good beginning, let us grant—will not suffice in themselves to reach the enemy.

So deep is the stigma associated with the disease that patients avoid hospitals—even their family doctors—preferring quacks and others who promise a speedy cure. Legislation is in progress to prevent unauthorised treatment of the disease. The active sympathy should be sought of the 5000 men calling themselves herbalists, referred to by Mr. Hayes Fisher in the House. (Hansard, April 23rd, 1917.) I am sure the profession has no wish to interfere seriously with a calling which ministers to a thirst for "simples" so Gargantuan. These men have families and could be interested in public health; many of them are good botanists and of above the average intelligence. They know that syphilis and gonorrhœa are quite beyond the reach of herbs, and that even guaiacum—the holy wood—no longer avails.

To be successful in any fight the primary essential is to know where your enemy is placed. The Commission did not feel able to recommend confidential notification, nor does the new Act enforce it. Perhaps they were wise and knew their business better than some of us who advocate it. Realising as fully as anyone the strong arguments against notification, the gravity of the situation outweighs with me all private considerations, and I feel sure that within a year we shall be ready for the change. It works well, we are told, in Scandinavian countries, and it will be interesting to have the results from those Australian dominions in which it has been introduced.

Another point really more serious is also associated with notification. Both syphilis and gonorrhœa require protracted treatment. It is the partially or badly treated cases that come to us 10 to 20 years later with aneurysm or nervous breakdown. The primary symptoms are often so slight that it is impossible to get patients to continue a course of medication lasting a year or even more. Here is where the clinics will be on trial, and we shall watch their experience anxiously. I see reports from a Boston hospital at which 23 per cent. of the patients did not return, and to a New York venereal clinic 29 per cent. of the syphilitics came but once. To be successful in this fight we must have control of the patients—the treatment must be compulsory. It is so in the Army, from which the men with syphilis and gonorrhœa are not to be allowed to return to private life until a reasonable guarantee is given in each case of cure. If the House of Commons in any way represents outside opinion the public is a long way from appreciating the appalling risks they run. Though on the street to-day, the spirochæte may be in your home to-morrow. The very reasonable proposals of Captain Guest, Mr. Rawlinson, and Sir H. Greenwood (Hansard, April 30th), that sanitary and curative measures should be adopted in the case of persons, men and women, convicted of certain definite offences, was met by cries of ruthlessness and Prussianism. The probation officers and workers of the London Diocesan Police-court Mission know what they are talking about when they urge compulsory detention and treatment. Practised with Mars, it is no sex inequality to do the same with Venus, but the Government is committed, for a time at least, to a policy of persuasion, feeling that notification and compulsory treatment are too far in advance of public opinion. Mr. John Burns (Hansard, April 30th) thinks that the Local Government Board has the power to deal with the question of notification. I doubt if it could enforce the treatment of syphilis any more than it does in the case of tuberculosis.

THE OUTLOOK.

To many the venereal situation looks dark and hopeless. It is not. For the first time in history the outlook is bright, despite the fact of an inevitable increase of cases during and after the war. Three things have happened to justify this hope.

The public is at least awake to the necessity of an educational campaign, in which the appalling dangers of the disease shall be brought home plainly. Other means than those heretofore must be brought to bear in a full and free enlightenment upon the subject. Such literature as Corbett-Smith's "Problem of the Nations" and the various publications of the National Council are having an enormous influence. That the preaching of chastity appears a ghastly failure, in the face of the record of 800,000 fresh cases annually in this Christian kingdom (Melville White's estimate), is no reason why the earnest appeal for personal purity should not take the first place in the educational campaign. Where the Apostles had to confess defeat their successors need not feel discouraged, and had they not laboured so hard for so long the percentage of the poxed in the community might have been doubled. The reproach is not upon Christianity but upon earthen vessels too frail to hold it. Venereal disease has been called a bi-sexual problem. Patrol beside St. Martin's Church at this hour and you would be inclined to deny it; but remember, for the aggressive harlotage that still disgraces our streets man is primarily responsible. The blame, but not always the burden, is upon him. The pity of it is that the strong offences' cross is borne, not always by the offender, how much soever he may sorrow, but by innocent women and children who form more than one-half of the victims.

That the State has at last intervened is another ground for hope. In the matter of health you may trust the people. Once get democracy to realise that it is badly diseased and it displays a Job-like regard for its skin. Has not Tammany, a very synonym for corruption, given New York City the most progressive, up-to-date system of sanitation in the world? You will have gathered, Mr. President, that I am a strong advocate of strong central control in these matters. My inspiration does not come from Hegel or his bastard modern disciples, but from the fountain-head, the great teacher who tried in vain to bring the Athenians back to "thoughts of order, to disinterestedness in their functions, to that self-concentration of soul in one's own part, that loyal concession of their proper parts to others on which such order depends."[14] Plato tells us "States are as the men are; they grow out of human characters." How chastened has been the strong Ionian element in British life! The war has brought to the individual a Dorian realisation of duty never before witnessed. All that a man hath—all that he holds dearest are drawn into a new ideal of service to the State. It will not be so hard after this schooling to accept an ever-increasing control of the disease by a Ministry of Health, with notification and compulsory treatment.

Most hopeful of all is the changed heart of the people. At last the sinner is to receive Christian treatment. Above the mantelpiece of his library hung what the founder of my old school, the Rev. W. A. Johnson (Trinity College School, near Toronto), used to call the Magna Charta of humanity. In the centre of the most dramatic scene in the Gospels stood the woman taken in adultery. About her thronged the Scribes and Pharisees, with eyes turned from her to the Christ, stooping as he wrote with his finger on the ground the watch-words of the New Dispensation—"He that is without sin among you, let him first cast a stone at her." I should like to see a copy of this picture in every one of the new clinics in testimony that we have at last reached the full meaning of the priceless message, "Neither do I condemn thee; go, sin no more."

Fighting in this spirit, the soldiers of our "New Model" will put up an irresistible barrage against the most formidable enemy of the race—an enemy entrenched behind the strongest of human passions, and the deepest of social prejudices.

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[14] Pater: Plato and Platonism, 1893, p. 216.

A BLOOD CHANGE IN GAS POISONING.

BY JAMES MILLER, M.D. EDIN., F.R.C.P. EDIN.,
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IN conjunction with my colleague, Captain Harry Rainy, I published a note on a new sign in Gas Poisoning in THE LANCET of Jan. 6th, dealing with some fourteen cases of the condition admitted to No. 2 Scottish General Hospital during the month of September last. Since that date the investigation has been carried out in my laboratory upon cases in Craigleith Hospital and the auxiliary hospitals in the Edinburgh area.

I gladly take this opportunity of thanking Major David Wallace, C.M.G., Red Cross Commissioner for the district, Dr. Graham Brown, and Miss C. M. C. MacNeil, M.B., of Seafield Military Hospital, Leith, and my colleagues in No. 2 Scottish General Hospital, for facilities in the work, and for notes of cases. I would specially mention Captain D. J. Glen, who has been of great assistance in finding out cases as they came into hospital. For the laborious work of making the blood counts I have to thank my assistants, Miss Jean McLean, M.D., and Mr. Malcolm Smith. The differential counts have in every instance been made upon at least 300 leucocytes, and they have been controlled by several observers and by repeated examination.

TABLE I.—*General Survey of the Cases, Excluding the 14 Already Recorded.*

No.	Polymorphs.	Lymphocytes.	Mononuclears.	Eosinophils.	Mast.	Period between gassing and examination.	Immediate symptoms.	Symptoms at time of examination.
15	36·2	55·4	2·3	5·08	0·4	1 m.	Twice gassed, unconscious second time.	Vomiting, dyspepsia, pains in head.
16	75·7	21·7	1·2	1·2	—	2 ,,	Unconscious.	Cough, tightness in chest.
17	49·3	45·6	3·0	2·0	—	—	—	—
18	54·5	36·3	4·0	4·5	0·6	—	—	—
19	56·2	37·0	1·9	3·9	0·9	1 m.	Choking sensation.	No symptoms.
20	53·8	38·6	4·3	2·1	1·2	6 ,,	Slight case.	,, ,,
21	40·3	54·8	1·8	2·4	0·6	13 ,,	,, ,,	Gastric pain, vomiting, losing weight.
22	58·5	37·4	2·5	1·1	0·2	12 ,,	Lost power of legs, but did not go sick.	Shortness of breath.
23	57·5	35·2	6·7	0·3	—	17 ,,	Slight case.	Chronic otitis media, no present symptoms.
24	59·9	37·9	1·1	0·5	0·3	1 ,,	Could not eat food for several days; stretcher case.	No symptoms. Suffering from scabies; discharged fit.
25	47·2	48·3	1·6	2·4	0·2	3 ,,	Became unconscious 4–5 hrs. after attack.	Languid, breathless, has sick spells.
26	32·1	63·7	2·8	0·9	0·3	3 ,,	Became unconscious in 1½ hrs. after attack.	Headache, cough, breathlessness.
27	50·5	43·2	2·5	3·5	0·5	12 ,,	Unconscious 4 days.	Has frequent attacks like pneumonia which last 3–4 days and subside.
28	52·4	43·7	1·5	1·8	0·3	3 ,,	Cough and breathlessness.	Cough persists, but is much improved.
29	70·3	26·9	1·1	1·4	—	3 ,,	Cough, vomiting, and unconscious.	Dyspnœa and pain in chest.
30	53·2	41·9	0·9	3·8	—	2 ,,	,, ,,	,, ,,
31	49·4	49·4	0·9	0·3	—	3 ,,	Slight cough, copious catarrh.	Cough and spit.
32	56·4	41·7	0·4	1·3	—	3 ,,	Vomiting, severe headache.	Severe headache.
33	35·5	56·2	3·0	5·0	0·5	1 ,,	Vomited; stretcher case.	Dyspnœa and pain in chest.
34	47·0	49·0	1·08	1·9	0·2	3 ,,	,, ,,	,, ,,
35	50·4	44·6	1·7	3·2	—	12 ,,	No symptoms.	No symptoms.
36	68·0	30·0	2·0	—	—	2 ,,	Vomited.	Tight feeling in chest.
37	37·8	54·8	2·6	3·5	1·1	12 ,,	Cough and vomiting.	Wheezing and cough
38	56·3	39·3	1·7	2·7	—	4 ,,	Not unconscious; vomiting not severe.	Bronchitis.
39	44·0	54·3	0·3	1·3	—	1½ ,,	Unconscious 4 hours; very severe case.	Breathlessness; tightness in chest; giddiness.
40	66·7	35·3	2·0	2·0	—	11 ,,	Unconscious 2 hours; back to duty in 6 days.	Complains of shortness of breath.
41	50·0	45·0	3·0	2·0	—	6 ,,	Did not feel much at time. A few days after, cough and breathlessness	Bronchitis.
42	59·4	34·9	2·9	1·8	1·0	20 y.	In bed with bronchitis for 5 weeks. Indigestion and bronchitis for 6 months thereafter.	None, but liable to bronchitis.
43	56·6	35·2	6·7	1·5	—	15 ,,	Pain, choking sensation, bronchitis lasting 3 weeks.	Almost complete loss of sense of smell.
44	47·7	47·5	4·0	0·4	0·4	2 m.	Slight.	Breathlessness and cough.

M, months; Y, years.

Investigation of Blood Changes.

The further investigation of the matter has merely confirmed the preliminary work as regards the main thesis, while modifying the conclusions in one or two respects.

Table I. gives a general survey of the cases, excluding the original 14, with differential count, period elapsed since gassing, the immediate symptoms, and the symptoms at the time of examination. The statement in the original note that this change takes some time to develop, probably three to four months, has to be modified to this extent, that in severe cases the sign appears within a month or six weeks of the gassing, possibly sooner. Cases 33 and 39 show this to be the case. Our original statement was based upon Case 16, which eventually proved to be a much milder case of gassing than the statement of the man led us to believe, the man having since returned to duty.

In order to ascertain whether the relative lymphocytosis was due to an actual increase in the number of lymphocytes or to a diminution in the polymorphonuclear leucocytes, Table II. has been drawn.

TABLE II.

No.	—	Leuc. per c.mm.	Percentage. P.M.	Percentage. L.	Total. P.M.	Total. L.
	Normal—Minimum.	5,500	70	20	3,850	1,100
	Normal—Average.	7,000			4,900	1,400
	Normal—Maximum.	9,000			6,300	1,800
1	Severe case.	5,000	50	40	3,500	2,930
3	Persistent symptoms.	5,968	47	44	2,820	2,676
4	,, ,,	6,570	33	60	2,168	3,942
6	,, ,,	6,500	51	45	3,315	2,925
7	Slight case.	7,812	58	35	4,530	2,734
9	Severe case.	6,562	39	51	2,593	3,360
10	Very slight case.	8,124	62	30	5,036	2,437
11	,, ,,	7,184	72	23	5,047	1,638
16	Severe case.	9,686	75	21	7,264	2,034
12	,, ,,	5,000	35	58	1,750	2,900
13	Severe case (1st examination).	8,122	47	47	3,816	3,816
39	Severe case.	11,562	50	46	5,781	5,300
15	Severe case (2nd examination).	17,000	37	58	6,401	10,034
13	,, ,, ,,	15,000	44	46	6,600	6,900

Table II. gives a series of cases taken at random in which a leucocyte count was made in addition to the differential count. From the two data—number of leucocytes per c.mm. and percentage of the two main types found—the actual number of lymphocytes and polymorphonuclear leucocytes has been given in figures. The first lines of the table give the average in normal cases at what may be taken as the physiological limits and the mean.[1] This table shows that in all cases in which the sign is marked—i.e., in the cases in Table II., with the exception of Nos. 10, 11, and 16, which were slight, there is an absolute increase in the number of lymphocytes. In certain cases there is some diminution in the number of polymorphonuclear leucocytes, which tends to accentuate the sign, but the lymphocytosis is, nevertheless, an absolute one. Moreover, in Cases 13 and 15, which show a fairly well-marked leucocytosis, there is still a lymphocytosis. These cases are given in detail below.

Table III. classifies the cases according to the degree of lymphocytosis.

It will be seen that all with a count of 50 per cent. or more of lymphocytes are severe cases, with the exception of No. 21, which was a slight case of gassing, but the symptoms have persisted to the present time—i.e., 13 months after the gassing. Of those with a lymphocyte count of 40 per cent. or over, all, with the exception of two, Nos. 31 and 35, are severe cases or cases with persistent symptoms. Too much stress cannot, of course, be laid on these percentages, but we have found that they are wonderfully constant on repeated examination and by different observers.

[1] Gulland and Goodall: The Blood, second edition, p. 78.

TABLE III.—*Cases with High Lymphocyte Count.*

(A.) *Count of over 50 per cent.*

No.	Lympho-cytes.	Interval in months.	Symptoms.
8	56·3	12	Severe case, unconscious 4 hours.
9	51·7	11	Fairly severe, dazed, cough still.
12	58·2	17	Severe case, unconscious.
21	54·8	13	Slight persistent gastric symptoms.
37	54·8	12	Fairly severe, cough and wheezing still.
4	60·0	5	Severe case, symptoms still.
15	55·4	1	Severe case, persistent symptoms.
26	63·7	3	Severe case, unconscious.
33	56·2	1	Severe case, vomiting.
39	54·3	1½	Severe case, unconscious.

(B.) *Count of over 40 per cent.*

3	44·6	12	Marked case, eye symptoms still.
6	45·2	12	Fairly severe, eye symptoms still.
13	47·6	12	Severe case, unconscious.
27	43·2	12	Severe case, still symptoms.
35	44·6	12	Slight case, no present symptoms.
1	40·8	3	Severe case.
2	40·0	3	Marked symptoms.
14	40·0	(2)	Partly unconscious, symptoms still.
25	48·3	3	Unconscious.
28	43·7	3	Slight case.
30	41·9	2	Unconscious.
31	49·4	3	Slight.
32	41·7	3	Vomited, headaches.
34	49·0	3	Vomited, stretcher case.
41	45·0	6	Fairly severe case, symptoms still.
44	47·5	2	Slight case, persistent symptoms.

A classification of the cases according to the period which has elapsed since the gassing (Table IV.) does not yield any very definite information beyond the fact that the sign is a wonderfully persistent one, and has not disappeared in any instance in my experience.

In this relation I was fortunate in being able to examine the blood of two schoolmasters (Cases 42 and 43) who had been gassed with chlorine, the one 15 and the other 20 years previously. Both suffered severely at the time and symptoms persisted, in the one for some weeks and in the other for many months. The counts in each instance give a slight relative increase of lymphocytes, but they are probably not outside the limits of error.

TABLE IV.

9 and over 9 months.

No.	Months elapsed.	Symptoms.	P.M.	Lymph.
3	12	Marked case with eye symptoms.	47·6	44·6
5	12	Slight case.	58·2	33·4
6	12	Fairly severe with eye symptoms.	51·1	45·2
8	12	Severe, unconscious for 4 hours.	37·5	56·3
9	11	Fairly severe, dazed, cough still.	39·9	51·7
10	12	Slight case, no present symptoms.	62·3	30·2
11	9	" " " "	72·1	23·4
12	17	Severe case, unconscious.	35·3	58·2
13	12	Severe case, unconscious, but no symptoms now.	47·9	47·6
21	13	Slight case.	40·3	54·8
22	12	Did not go sick, still breathless.	58·5	37·4
23	17	Slight case, no present symptoms.	57·5	35·2
27	12	Severe case, still complains.	50·5	43·2
35	12	Slight case, no present symptoms.	50·4	44·6
37	12	Fairly severe, cough and wheezing still.	37·8	54·8
40	11	Fairly severe, symptoms still present.	66·7	35·3
		6 or under 6 months.		
1	3	Nausea, severe gassing.	50·2	40·8
2	3	Marked symptoms, symptoms still.	53·1	40·0
4	6	Severe, symptoms still.	33·5	60·0
7	2	Very slight case.	58·5	35·0
14	2	Half unconscious, slight symptoms still.	50·0	40·0
15	1	Twice gassed, unconscious, symptoms still.	36·2	55·4
16	2	Unconscious.	75·7	21·7
19	1	Choking sensation.	56·2	37·0
20	6	Slight case.	53·8	38·6
24	1	Stretcher case.	59·9	37·9
25	3	Unconscious.	47·2	48·3
26	3	"	32·1	63·7
28	3	Slight cough, breathlessness.	52·4	43·7
29	3	Unconscious.	70·3	26·9
30	2	"	53·2	41·9
31	3	Slight case.	49·4	49·4
32	3	Vomiting and headache.	56·4	41·7
33	1	Vomiting, stretcher case.	35·5	56·2
34	3	Vomited, stretcher case.	47·0	49·0
36	2	Slight case.	68·0	30·0
38	4	Vomiting, persistent bronchitis.	56·3	39·3
39	1½	Severe case.	44·0	54·3
41	6	Fairly severe, persistent bronchitis.	50·0	45·0
44	2	Slight case, persistent bronchitis.	47·7	47·5

As regards the type of gassing (i.e., whether cloud or shell) it was not always possible to get a decided answer.

Of the cases in which a definite statement was obtained 16 were cases of cloud-gassing and 16 cases of shell-gassing. As regards the further question of the chemical nature of the gas nothing decided can be stated. Sometimes the men described the smell and first sensations produced by the gas, but usually, as might be imagined, their minds were not very clear on this point.

The type of gassing and the chemical nature of the gas do not, however, appear to make any difference as regards the blood change. Of the 10 cases in which the lymphocyte count is over 50 per cent. 4 were definitely cases of cloud-gas poisoning and 4 were cases of shell-gassing. In the other 2 the nature of the gassing was uncertain.

In 8 cases the statement was volunteered that the gas was of British origin. In 24 it was either certainly or probably German.

Classification: Cases with Counts Approximating to Normal.

On investigating the cases a little more closely they may be classified into groups. In the first place, a group the counts of which approximate more or less closely to the normal, which are, in other words, either normal or within the limits of error. Of these six—viz., Nos. 5, 10, 11, 19, 22, and 23—are definitely slight cases in which the gassing was a secondary consideration. Taking No. 22 as an example:—

No. 22.—Man gassed on Sept. 25th, 1915, through lifting his helmet for a couple of seconds only. He lost the power of his legs for some ten minutes, but did not vomit. He has always suffered from bronchitis and asthma, but has been worse since the gassing. He did not go sick until some time afterwards, but he has since been dismissed from the Army on account of his asthma. This is a case in which a condition previously present was aggravated by gassing, but clearly the actual gassing was not severe.

There is another series of cases in which counts approximately normal were obtained but in which the gassing was moderately severe. These require a rather more careful scrutiny. Such are Nos. 16, 24, 29, 36, 38, and 40.

No. 16.—Man gassed in July, 1916. His statement is that he was rendered unconscious, and he complained when admitted to hospital of cough and tightness in the chest. He was sent to a convalescent home soon after, where he was punished for breaking bounds, and he has since rejoined his unit and has received promotion. It is clear that he cannot have been a severe case of gas poisoning.

No. 24.—Man gassed with cloud gas in August, 1916, through not having his helmet on. He was not rendered unconscious, but had to be carried back on a stretcher. He could not eat food for several days. He suffered from cough. His symptoms had practically disappeared before admission to hospital. A note from the medical officer of the convalescent home to which he was sent states that he had neither gastric nor pulmonary symptoms when discharged. He has since rejoined his unit.

No. 29.—Man gassed with shell gas at end of July, 1916. He had no helmet on and suffered from vomiting and breathlessness at once. These symptoms continued. Fourteen hours later he became unconscious and remained so all day. He continued to suffer from cough with expectoration, and when admitted to hospital complained of breathlessness on exertion and pain in chest. No heart lesion found on auscultation. Although showing an almost normal blood count on Oct. 25th, the count a month later was as follows: Polymorphs, 58·7; lymphocytes, 39·3. The man was suffering from psoriasis. This man volunteered the statement that the gas smelt like ammonia.

No. 38.—Man gassed at same time as No. 29. He states that the gas which was shell had a sickly sweet odour. He vomited immediately, but had no cough or breathlessness and did not become unconscious. He was able to put on his helmet. He continued in action all night and felt better in the morning. His age is 41, and he has suffered from cough for many years. His present attack of bronchitis began two months after the gassing. He is evidently a case of chronic bronchitis of long duration.

No. 40.—Man gassed in December, 1915. He is uncertain whether it was shell or cloud gas, but it had a "pleasant smell." It made his eyes water and caused severe coughing. He felt "intoxicated" and became unconscious, remaining in this condition for about two hours. He vomited freely in the dressing station. He returned to duty after six days. He has always been subject to asthma and bronchitis, but since being gassed he has been very short-winded. His medical officer has no doubt that he exaggerated the story of the gassing, as he makes the most of all his ailments. His present attack of bronchitis does not appear to have been connected with the gassing. A second examination of blood, a month after the first, resulted as follows: Polymorphs, 57·5; lymphocytes, 33·5.

No. 36.—Man gassed with shell gas on August 21st, 1916. He vomited, but did not become unconscious. He complains of having a large amount of spit every morning; also of tight feeling in chest and pain in left side. He looks very well and nothing can be made out on examination. The film, which was sent from a distance, was bad. No great reliance can, therefore, be placed on the result, but as the man has returned to duty the case is obviously a slight one. The medical officer of the convalescent home regarded the man as making the most of his condition.

It will be seen that of the above-mentioned cases three are much less-marked cases of gas poisoning than the story of the patient would indicate, all having returned to duty within three months of the gassing. Other two are cases of chronic bronchitis which happened to be gassed, but a considerable interval elapsed between the gassing and "going sick." No. 29, the only remaining one of the series, is

apparently a clear case of pretty severe gas poisoning without marked blood change. A complication in this case, however, is a skin condition—psoriasis.

Grouping of Cases according to Chief Symptoms.

The remaining cases may be classified into groups according to the nature of the chief symptoms. The larger proportion show at some period more or less marked symptoms associated with the respiratory passages. In another series of cases the symptoms are mainly gastric. Not infrequently both types are to be met with together. Still another series is those in which nervous symptoms predominate.

In a small group of two cases, Nos. 3 and 6, gassed at the same time (September, 1915, British gas) the chief symptom was obstinate conjunctivitis. This was associated with tremors. It is possible that the nature of the gas has something to do with the peculiarity of the symptoms. It is a striking evidence of the profound effect which gassing has upon the tissues of the body that a year after the gassing the conjunctiva should exhibit such marked inflammatory change.

Nervous phenomena are exhibited by a large number of cases sometimes in the form of what may be called neurasthenia, as in Nos. 15 and 27. Headache is severe and persistent in some—e.g., Nos. 15 and 32. Tremors were present in Cases 3, 4, and 6.

Gastric symptoms are among the most obstinate in some cases. Two of these, Nos. 13 and 15, are worth recording as they are associated with a high leucocyte count.

No. 13.—Gassed (British) in September, 1915. He lost consciousness some hours afterwards, and remained unconscious for four days. For several days afterwards he suffered from intense nausea and vomiting, and these persist in some degree up to the present time. He was sent home, and after a month returned to the Front, and remained there from November, 1915, till July, 1916. He remained fairly well until May, when he began to suffer from pains, particularly in the shoulder and chest, like a knife going through him. He was again sent home, and has been twice in Craigleith Hospital, with intervals at convalescent homes. He has constant nausea and disinclination for food and occasionally vomits. The pains in the chest and limbs also persist to the present time. His blood shows a persistent moderate leucocytosis (15,000). His differential count on last examination was: polymorphs 44, lymphocytes 46. There is thus an absolute increase in the polymorphs as well as in the lymphocytes, although it is more marked in the case of the lymphocytes. (See Table II.)

No. 15 is a very similar case who was gassed on two separate occasions—once (on July 30th, 1916) slightly, owing to sleeping through a gas attack in his dug-out; on another occasion (August 3rd) while trying to extricate an officer from his dug-out after the explosion of a shell. On the latter occasion he was rendered unconscious. His case is complicated by neurasthenia following shell shock. He suffers from persistent pains in the head and dyspepsia with frequent vomiting. His blood shows a moderate leucocytosis, 17,000. His differential count on the first occasion was: polymorphs 36·2, lymphocytes 55·4; on the second occasion, three months later, 37·3 and 58·3 respectively. The man is still in hospital and shows little sign of improvement.

The question arises as to what the leucocytosis is due to in these cases. Gastritis is undoubtedly the most prominent symptom, and it is reasonable to suppose that subacute inflammation of the gastric mucous membrane might account for it. The interesting point is that the lymphocytes are more markedly stimulated than the polymorphs.

Cases with respiratory symptoms.—The cases with marked and persistent respiratory symptoms are most numerous. The common complaints are pain in the chest, cough, and breathlessness. Such cases are Nos. 9, 25, 26, 31, 33, 37, 39, and 41.

No. 9.—Gassed (British) October, 1915. He was exposed for 20 minutes, but only complained of feeling dazed. He suffered from cough for three months, and in September, 1916, complained chiefly of breathlessness. On auscultation crepitations could be heard in both lungs. His was the case which first drew attention to the blood alteration. His count, confirmed on several occasions, was: polymorphs 39 per cent., lymphocytes 51 per cent. His leucocyte count was 6562 per c.mm.

No. 31.—Gassed on July 25th, 1916 (shell). He was partly buried by the explosion and stunned. He had breathlessness from the first, also vomiting. He was conscious at the time of a sweet, rather pleasant odour. At the time of examination (Oct. 20th) he had a slight cough and somewhat copious catarrhal expectoration. He had a scorbutic skin condition. The percentage of polymorphs and lymphocytes was the same—viz., 49·4.

No. 37.—Gassed on Sept. 25th, 1915 (British, burst cylinder). He was rendered unconscious by the shell which burst the cylinder, so that he had a good dose of the gas. When he recovered consciousness he started coughing and vomiting. He complains (Oct. 16th, 1916) of pain in the right side of chest. He is troubled with wheezing and coughing. His medical man, not being able to make out much in the way of physical signs, regards the man as a humbug. His count is: polymorphs 37·8 per cent., lymphocytes 54·8 per cent.

No. 39.—Gassed on Oct. 15th, 1916 (shell). He noticed a sweetish odour which caught his breath. He was unconscious for four hours. Oxygen was administered for four days. His most prominent symptoms are breathlessness, pain and tightness in the chest, and giddiness. He complains also of impaired digestion. His count was: polymorphs 44 per cent., lymphocytes 54·3 per cent. His leucocytes numbered 11,562.

No. 41.—Gassed May, 1916 (shell). He did not feel much at the time. A few days afterwards he developed cough and breathlessness. He is still suffering from bronchitis. His count is: polymorphs 50 per cent., lymphocytes 45 per cent.

Type of Lymphocytosis.—Cause of Blood Change.

The type of leucocyte which is increased is the small lymphocyte with relatively large deeply staining nucleus and relatively little protoplasm. In a few cases there was a fair sprinkling of larger lymphocytes with a broader rim of protoplasm and a larger nucleus. No other type of blood cell appeared to be influenced in any constant fashion.

The last point which arises is the question of the cause of the blood change. A relative or absolute lymphocytosis is met with as an accompaniment of a large number of pathological conditions. Of the list mentioned in Gulland and Goodall only two—viz., chronic catarrh of the small intestine (relative lymphocytosis) and whooping-cough—seem to have any relation to conditions met with in gas poisoning. Undoubtedly gastric catarrh is a prominent symptom in a large proportion of these cases.

The blood change would appear to have no relation to the nature of the gas employed. Apparently, therefore, it is due to some change set up which is common to all types of gas poisoning. It may be that it is the chronic catarrh of respiratory or alimentary mucous membranes which explains it, but we are still in the early stages of our knowledge of the effects of gas poisoning on the body. They are undoubtedly very profound and persistent. No mention is made of any blood change in the official Memorandum on Gas Poisoning in Warfare, but that pamphlet deals only with the immediate effects of the various gases. We know, however, that catarrh of respiratory and gastric mucous membranes is present in the early stages and tends to persist. Lymphocytosis is met with in tuberculosis, syphilis, and other subacute and chronic infections. From analogy, therefore, one would judge that the chronic catarrh is a factor in the production of the change. In two cases with marked gastric symptoms there was a moderate leucocytosis with a persistent high lymphocyte count.

Recently I had the opportunity of examining the blood of an officer who was accidentally gassed in this country with chlorine. The accident happened on Jan. 24th, 1917, and the blood was examined on the 27th. The red cells numbered 5½ millions, the hæmoglobin was 98 per cent., and the white cells were 5,900 per c.mm. Beyond a slight leucopenia, there was therefore no change. The differential count was normal: polymorphs 68·5, and lymphocytes 25·5.

Little can be gathered from the examination of a single case, but what evidence there is goes to show that the gassing results in a destruction of leucocytes, but that at such an early stage there is no stimulation of any one type of leucocyte. The case was a very slight one, the patient returning to duty within a week of the gassing.

Summary and Conclusions.

1. In cases of gas poisoning in which symptoms persist, there is an increase in the number of lymphocytes, relative and absolute, in the circulating blood. In slight cases this may not be beyond the normal limits or in excess of what may be met with from other causes. In any marked case, however, the change is sufficiently striking to be of some importance in cases where the medical officer is in doubt as to the reliance to be placed upon the statements of men complaining of having been gassed.

2. The blood change is elicited by a differential count of the leucocytes, and it may be taken that a count in which the percentage of lymphocytes approaches that of the polymorphonuclear leucocytes, indicates that the patient is still suffering from the effects of the gassing—i.e., provided there is no other complicating disease present which might produce a similar change. A slight relative lymphocytosis is not an uncommon finding in men from overseas or in anyone, so that no great reliance can be placed upon the sign unless it is marked—i.e., unless the percentage of lymphocytes approaches closely that of the polymorphonuclear cells.

3. The cell which is increased is the ordinary small lymphocyte of the blood. There may be in some cases a diminution in the number of polymorphonuclear leucocytes which will, of course, accentuate the sign, but the increase of lymphocytes is an absolute one. Moreover, it appears in cases with a high leucocyte count.

4. The change is one which develops early, probably within a month of the gassing, and continues for a long time; in cases with persistent symptoms for at least 18 months.

5. The change appears to be independent of the kind of gas, and it is shown by patients exhibiting many varieties of symptoms.

6. It is not clear what the change is due to, but from analogy with other conditions exhibiting a lymphocytosis it is probable that chronic inflammatory change in respiratory and gastric mucous membranes is at least a factor.

Note.—Since writing the above I have had a further series of cases gassed during the early months of 1917. The same blood change is shown in marked degree. One of the cases after three months gives the following differential count: polymorphs 29·5, lymphocytes 66·6, mononuclears 2·0, eosinophils 1·9. These cases have shown more marked nervous phenomena—viz., sleeplessness and night terrors.

Edinburgh.

TRENCH FEVER.

IS THIS CONDITION A SPIROCHÆTOSIS?

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With a Note on the Technique of Wassermann Reaction by

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A CONSIDERABLE number of articles have recently appeared in the leading medical journals of the different countries at war on the subject of trench fever, together with theories as to its origin. A certain number of workers have discovered a spirochæte in the blood, and suggest that it is the source of infection. Riemer[1] has gone a step further and has succeeded in growing spirochætes by anaerobic blood culture, but he is in doubt as to whether he has discovered the cause of the disease.

A considerable number of trench fever cases have passed through my hands in the medical wards of the City of London Military Hospital, and it has been my custom to classify them as acute and chronic.

Acute cases do not arrive in this country until the acute symptoms have passed off. The patients give a history of the, now well known, characteristic symptoms of this disease—namely, a fever of 5 to 8 days' duration, of sudden onset, with or without shivering and acute pains in the lower limbs, particularly in the shafts of the tibiæ. On admission to hospital on arrival from abroad they show practically no symptoms, and do not complain of pain. In some cases, after a few days, generally 6 to 10 days after the temperature falls to normal, a relapse occurs which lasts 2 to 3 days with a return of pain in the limbs. Recovery is rapid and the patient may, or may not, have a second relapse. Should there be a second relapse, it is generally after an interval of about a fortnight, and the severity of the attack is much less than that of the first. In this way the disease dies out.

I have not investigated the origin of this type. The condition is relieved, if not cured, by the administration of salicylates, and the stay of the patient in hospital is of comparatively short duration.

Chronic cases.—A totally different state of affairs obtains in the second class of cases—namely, the chronic type. The patient is admitted convalescing from a recent attack of trench fever diagnosed in some cases as such, in others as P.U.O., and in others as myalgia. The last two terms cover a multitude of diseases found in men on active service, but the cases referred to in this article are only those in which the patients give a history of an attack of fever with the characteristic symptoms of trench fever. On admission the one symptom is pain in the shafts of the tibiæ with extreme tenderness in these regions. There is no evident thickening of the bone or periosteum and no sign of any skin involvement. The temperature ranges about the normal line, but is never above 100° F. When first these cases were admitted it was found that no medicine would relieve the condition except morphine, and the pains were frequently so severe as to necessitate its use. Salicylates and iodides gave no relief.

The condition resembled a syphilitic infection of the periosteum so closely that the question arose as to whether the Wassermann reaction was likely to be present. This was tested by Dr. Carnegie Dickson. (See below.) In the vast majority of cases he found that the Wassermann reaction was positive. The cases did not give a high index, but always a figure high enough for the reaction to be considered as positive. The patients' histories were carefully investigated, but in only 4 out of 63 cases could any history of syphilis be obtained. Possibly more could have given a positive history of syphilis, as soldiers, for obvious reasons, do not readily admit having had this complaint.

Intravenous injection of galyl was administered on the lines laid down for syphilitic cases—that is, injections of galyl followed in three days' time by intra-muscular injections of grey oil, once a week for ten weeks. As a result of treatment the patient's general condition distinctly improved, but the pains did not disappear with that rapidity for which one could have hoped. Many cases had a decided increase of pain during the night following the intravenous injections, and then for several days were comparatively comfortable. The very severe cases did not show any permanent improvement and were finally boarded out of the Army. During the course of treatment two of these developed very severe posterior nerve root pains, similar to those occurring in syphilitic conditions. However, more than half of the cases returned to duty with the Army. This may seem a small percentage of recoveries, but it should be pointed out that all the cases treated in the above manner were of a very severe type and had resisted all other forms of treatment. It is important to note that after a few intravenous injections the Wassermann test reacted negatively.

There is not the time at present to work out minutely the details of these cases, but is not the above additional evidence in favour of the spirochætal origin of the disease? We know that a positive reaction is found in other spirochætal diseases as well as syphilis, as in yaws, for example. Granted a spirochæte has been cultured from the blood of these patients, and the blood of a certain type of cases—namely, the long-standing ones—gives a positive Wassermann reaction, the natural deduction is that the disease is a spirochætosis.

As regards the acute type of the disease, it would be well worth while investigating the reaction, but it is possible that these cases are of too short duration to give a reaction.

It is recognised that the matter requires much more scientific study, and it is hoped that the above short notes in a few cases—about 60—may lead those who have the opportunity to make further investigations on these lines.

[1] Münch. med. Woch., No. 3, 1917.

Note of Technique of Wassermann Reaction, by W. E. CARNEGIE DICKSON.

The technique employed in testing the Wassermann reactions in the foregoing cases was that elaborated by Professor Robert Muir, of Glasgow, somewhat extended, a series of 12 tubes being used for each case. In these the constants were the antigen (alcoholic extract of human heart, previously standardised), 0·1 c.c. slowly emulsified in 0·6 c.c. normal saline, and 0·05 c.c. patient's heated serum. The variant was fresh guinea-pig's serum from 0·01 to 0·3 c.c., the minimum hæmolytic dose of complement being separately estimated with each set of tests, so that the reaction could be calculated and stated in numbers of hæmolytic doses of complement. The hæmolytic system consisted of 1 c.c. 3 per cent. washed sheep's corpuscles sensitised with five times the M.H.D. of rabbit's H.I.B.

These cases were tested with my other routine cases along with the sera of known negative and syphilitic controls. The patient's sera were also tested alone without antigen, and the complement-deviating capacity of the antigen itself was also tested on each occasion. Five M.H.D.'s of complement was the usual "syphilitic margin" in these reactions, a strong positive serum running to 15, 20, 30, or more M.H.D.'s, and a negative either not absorbing any excess or only perhaps a half to one M.H.D. of complement.

THE SURGICAL USES OF OZONE.

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IN THE LANCET of Oct. 21st, 1916, a tabulated statement was given of 20 cases treated by ozone at the Queen Alexandra Military Hospital. Further cases are now recorded in the accompanying table.

Instructions for using ozone.—1. The accumulator should not be let down below 3½ volts; if it is, the ozone (if any) produced will not be strong enough to produce satisfactory results. The accumulators should be tested daily with a voltmeter, *and should be recharged every second day.*

2. The coil should be examined daily to see if it is sparking properly and the binding screws of the "trembler" screwed up tight.

3. The production of ozone should be tested before each patient is treated. This is done by holding a piece of white blotting paper saturated with the test: Starch, 1·25 per cent.; pot. iod., 0·25 per cent.; water, 98·50 per cent.; before the nozzle of the ozone tube. A deep blue colour should be produced in two seconds.

4. After using the flexible tubes they should be carefully wiped and steeped in *boiling* water for two minutes and then placed in cold water till they are again required. Ozone should be passed through the tubes to cleanse them thoroughly inside.

5. Boiled water *only* should be used for dressing and cleansing the wounds, sinuses, &c. Solutions such as lysol, carbolic acid, saline, &c., destroy the ozone by offering a field for chemical action.

6. It is emphasised that ozone will disclose the presence of (*a*) dead bone; (*b*) foreign bodies; (*c*) septic deposits; and it is useless to suppose ozone can effect healing till these conditions have been dealt with by the surgeon. The sudden appearance of fœtid pus is indicative of the existence of one of these conditions, and ozone should be continued to purify the discharge before any surgical operative steps are taken.

7. The usual changes that take place in the discharges are as follows: (1) Increase of pus; (2) decrease and disappearance of pus, which (3) is replaced by clear serum, which (4) eventually becomes reddish in colour.

8. It is reasonable to allow one week of treatment for every month of previous duration without healing, before healing can be expected.

9. The length of time for which the ozone is to be used depends on the size of the surface to be treated. The maximum time is about 15 minutes.

Table of Further Cases of Wounds, Sinuses, and Cavities Treated by Ozone.

M, months; W, weeks; D, days; Ap, applications; U.T., still under treatment; N.R., no result; Dec. Tr., declined treatment; R, removed.

No.	Nature of disability.	Previous duration.	Duration of treatment.	Result.
21	Twice plated for fracture of femur. "Plate" acted as "foreign body."	—	—	N.R.
22	Wound on instep, bell-mouthed sinus extending from dorsum to sole foot, 3 in. deep.	8 m.	3 m.	Healed.
23	Sinus in stump 2 in. deep.	10 ,,	7 w.	,,
24	Abscess cavity 3 in. deep, opening 4 by 3 in.	10 ,,	3 m.	,,
25	Ulcer on front of leg, 1¼ in. long, 1 in. deep.	18 ,,	3 ,,	,,
26	X ray burn, ulcer 10 by 4 in.	12 ,,	—	—
27	Large surgical wound, 10 in. long, 2½ in. deep, with inner opening leading to cavity in bone 2½ in. deep.	15 ,,	3 m.	Healed.
28	Sinus on left side of lower jaw, 1½ in deep.	4 ,,	5 w.	,,
29	Sinus extending from horizontal ramus of lower jaw 4 in. long.	1 ,,	5 ,,	,,
30	Compound comminuted fracture of upper third of left femur, causing sinus 3 in. deep.	17 ,,	6 ,,	,,
31	Fracture of upper part of thigh, leaving sinus 2½ in. deep, opening into cavity in bone, ¾ by 1½ in.	13 ,,	3 ,,	,,
32	Large wound on right side of face, 3 by 4½ in. with deeper opening extending into mouth.	3 w.	1 m.	,,
33	Sinus and cavity in tibia 1½ in. deep.	10 m.	15 d.	,,
34	G.S.W. leaving sinus in front of thigh 2½ in. deep.	10 ,,	—	,,
35	Sinus from inner angle of stump. Sinus from middle of stump 2 in.	10 ,,	3 w.	,,
36	Sinus 3½ in. deep below point of shoulder.	14 m.	—	U.T.
37	Sinus passing through middle part of thigh penetrating femur.	14 ,,	3 w.	Healed.
38	Sinus at point of chin, 1½ in. deep.	1 ,,	8 d.	,,
39	G.S.W. L. thigh, operation for dead bone, leaving large surgical wound 4 by 4 in. One sinus in femur 1 in. in diameter, 1 sinus in soft tissues 1 in. in diameter, both 2 in. deep.	17 ,,	—	,,
40	Suppuration after enucleation of eye.	18 ,,	4 w.	,,
41	Sinus 3 in. long extending from outer angle of flap.	10 ,,	5 d.	,,
42	Suppuration of socket after enucleation of eye.	6 ,,	5 w.	,,
43	Sinus at inner aspect of stump 2 in. deep, running into a cavity 2 by 3 in.	23 ,,	12 ,,	,,
44	Compound comminuted fracture of forearm, incised wound with sinus leading down to ulna 1½ in. deep.	4 ,,	3 ,,	,,
45	Ulcer on left chin.	2 ,,	6 d.	,,
46	Surgical wound 10 by 4 in. for removing of plate from femur, with 2 sinuses.	1 y.	2 m.	,,
47	Suppuration in socket after removal of eye.	6 w.	4 d.	,,
48	Ulcer on cheek with actinomycosis.	4 m.	17 ,,	,,
49	G.S.W. detaching all structures from brim of pelvis, leaving large cavity 4½ in. deep, communicating with bladder.	16 m.	—	Conval.
50	G.S.W. r. leg, 3 sinuses 1½ in., ¾ and 1 in. in depth.	10 ,,	—	Healed.
51	Sinus in stump, 1½ in. deep.	11 ,,	12 d.	,,
52	Compound fracture of ulna, flexor tendons gangrenous, had to be cut away.	13 ,,	1 m.	,,
53	Suppurating cavity in groin, 1 by 2¼ in.	2 ,,	1 m.	,,
54	Sinus in foot, 1½ in. deep.	2 ,,	9 d.	,,
55	Excision of elbow-joint, leaving sinus 1½ in. deep.	12 ,,	—	,,
56	Sinus in stump 3½ in. deep.	23 ,,	9 d.	,,
57	Two sinuses in upper part of thigh, outer sinus 2½ in. deep, inner sinus 3¼ in. deep.	12 ,,	—	,,
58	G.S.W. sinus inner side of arm, leading down to bone, 3½ in. deep.	2 y.	—	U.T.
59	G.S.W. r. arm, suppuration and sinus 1¼ in. deep.	14 m.	—	U.T.
60	Sinus in thigh 2½ in. deep.	9 ,,	6 w.	Healed.
61	Sinus in buttock 2½ in. deep, shell piece came away.	3 ,,	6 d.	,,
62	Sinus in left humerus 1 in. deep.	23 ,,	5 ,,	,,
63	Surface wound after operation, a bell-mouthed sinus through forearm.	12 ,,	24 ,,	,,
64	Wound from operation 1 by 3 in. and sinus down to humerus.	15 w.	6 w.	,,
65	Bell-mouthed sinus over left external malleolus.	13 m.	2 m.	,,
66	Empyema left side, profuse discharge of pus.	9 ,,	—	N.R.
67	Bell-mouthed sinus in forearm.	5 ,,	1 m.	Healed.
68	Deep furrow in tibia 1 by 3 in. leading down to cavity in bone.	22 ,,	—	U.T.
69	Suppuration in right lacrymal sac.	18 ,,	21 ap.	N.R.
70	G.S.W. penetrating wound through calf.	6 w.	17 d.	Healed.
71	Sinus and subcutaneous space right side of back of neck.	3 ,,	10 ap.	,,
72	Ulcer on external malleous (right).	7 m.	3 m.	,,
73	3 sinuses in left thigh.	14 w.	17 d.	2 out of 3 sinuses healed.
74	Empyema left side, profuse discharge, very fœtid. Cavity in lung.	2 m.	2 m.	Healed.
75	Two sinuses in right thigh: (1) 2½ in. deep; (2) 2 in deep.	2 y.	—	Dec. Tr.
76	Sinus through arm double bell-mouthed.	4 m.	—	N.R.
77	Sinus and cavity in lower jaw.	1 ,,	19 d.	Healed.
78	Sinus in stump 2½ in. deep.	5 ,,	—	R.
79	Sinus in os calcis (right) 1½ in. deep.	9 w.	9 d.	Healed.

Remarks.

Case 25.—Withdrawn from treatment for operation for 3 weeks.

Case 26.—Ulcer healed rapidly until half original size, when patient left hospital of own accord.

Case 31.—Ozone disclosed cavity in femur containing piece of shell ½ by ¼ in. which came out without operation.

Case 32.—Wound extremely unwholesome and fœtid but smell disappeared within 5 days of using ozone.

Case 36.—Ozone disclosed and X rays confirmed existence of several pieces of metal in and about sinus and on shoulder blade. Returned for operation.

Case 39.—Sinuses healed 1 month.

Case 41.—Examination showed streptococci before ozone. They completely disappeared after second application.

Case 44.—This case is awaiting plating of forearm.

Case 49.—Returned after operation Jan. 9th, operation Nov. 1st.

Case 50.—Ozone disclosed dead bone, which came away.

Case 55.—Transferred to Oxford at own request.

Case 58.—Returned after operation, Dec. 13th.

Case 59.—Returned after operation, Nov. 30th.

Case 67.—Transferred to Aldershot.

Case 69.—Returned for operation; lacrymal sac removed.

Case 72.—Returned for treatment after operation Dec. 18th.

Case 73.—Left of his own wish.

CRYSTALLO-CHEMICAL ANALYSIS AND ITS USE IN MEDICINE.

BY T. V. BARKER,

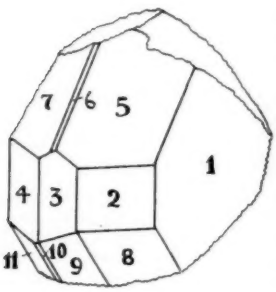
UNIVERSITY LECTURER IN CHEMICAL CRYSTALLOGRAPHY AND FELLOW OF BRASENOSE COLLEGE, OXFORD.

ON April 3rd I received a package from Dr. P. Govaerts (of the "Ambulance Océan," La Panne) containing a crystal of unknown composition and of intestinal origin, with the query: What is it? The crystal is shown in Fig. 1; it is seen to exhibit a moderately facetted development at the front end, the back portion being rounded. After an examination lasting 65 minutes it was possible to state that the crystal is "salol" (phenyl-salicylate). The correctness of this "diagnosis" was subsequently confirmed by a melting-point determination made on a tiny splinter weighing less than 0·0001 gramme (m.p. 43° C.), and by the specific optical properties of the resolidified fragment when examined under the polarising microscope.

Description of Crystallo-Chemical Analysis.

What was the method employed? A little reflection will negative the supposition that the substance had been subjected to chemical analysis. The crystal weighed (and still weighs) 0·229 gramme. The most expert chemist could scarcely hope to effect a complete analysis with this small amount of material. A little test-tubing might, it is true, have revealed the presence of a compound of salicylic acid; an organic combustion would have fixed the percentage of carbon and hydrogen, and so on. "Good luck," combined with a highly developed chemical instinct, might have been crowned with success. But suppose the crystal had been smaller; if its linear dimensions (9 × 7·5 × 4·5 mm.) had been one-tenth of what they happen to be, its weight would then have been of the order 0·0002 gramme. Any attempt at chemical analysis in such a case would be ridiculous. Identification, however, would have remained as sure as before, for the method adopted merely presupposes two conditions: first, that the crystal facets are smooth and light-reflecting; secondly, that the substance under investigation *happens* to have been previously examined by a competent crystallographer and its characteristic facial development put on record. Some 200,000 crystalline substances are known, of which about 10,000 have been properly investigated by the crystallographer; salol is one of the fortunate ten-thousand.

FIG. 1.



"Crystallo-chemical analysis"—the method of identifying well-crystallised products—we owe to the genius of Evgrav Stepanovich Fedorov, professor of crystallography in the School of Mines, Petrograd. Its immense possibilities are so obvious that the following brief description may be of interest to readers of THE LANCET.[1]

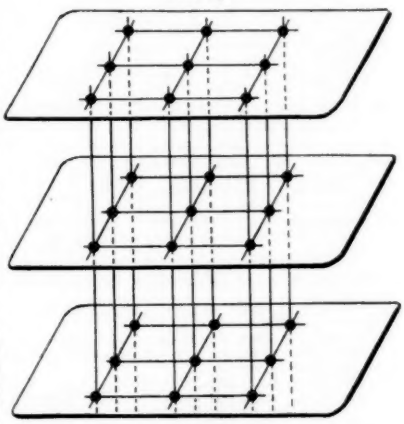
The specific nature of crystalline form was established a century ago. With the exception of a comparatively small number of substances which crystallise in the form of the cube or in forms having a simple relationship to the cube (crystals of the "cubic system"—common salt is an example), each definite chemical substance has its own *characteristic form*, whereby we mean that the plane faces are mutually inclined at specific angles. These angles can be measured in degrees and minutes by the help of the "goniometer." Measurement is especially rapid and exact with the latest form of instrument—the Fedorov theodolite goniometer. Thus, in salol—the angles between the pairs of faces numbered 1 and 5, 8 and 9 are respectively 60° 38′ and 13° 39′, and so on. The accurate measurement of a sufficient number of angles occupied half an hour. Twenty different angles were measured.

Now, suppose we assume that 20 angles have been measured on each of the 10,000 substances investigated by crystallographers, how are we going to sort out these 200,000 angles in the crystallographic literature in order to find a substance (if any) presenting that group of angular values which we have just obtained from the crystal under investigation? It is clear that any scheme of classification would be hopeless; there are too many variants to be classified, hampered as we are by a totally inadequate environment of space having merely three dimensions. If the number of variants (20) could be brought down to a respectable number, say three or five, the classification problem becomes feasible. Fedorov has devised a systematic and unambiguous method of reducing the number of variants. "Reducing" is not quite the right word; as we shall see later "integrating" is better.

Crystal Structure.

Crystal structure is a thing apart from all other structures; it is the very antithesis of "organised" structures associated with life. The latter macroscopically and microscopically reveal an intense differentiation of parts and functions. But the former reveals no such complexities, for all physical methods of exploration at our disposal (including, by the way, the recently discovered and very powerful X ray methods of research) converge to one conclusion—that down to molecular dimensions each part of a crystal is identical with, and similarly surrounded by, every other part. Let us draw on some sheets of paper two systems of equally spaced parallel lines so that they interlace at regularly recurring points or (alternatively let us potter about with some pieces of garden trellis-work) and arrange these sheets (or pieces of trellis) in parallel layers, taking care that successive sheets occupy similar positions—e.g., by drawing the upright system of lines included in Fig. 2. The points of intersection of the three sets of lines may be taken to represent the position of the structural particles (the lines are merely scaffolding—a figment of the imagination). Each crystalline substance has its characteristic array of particles, the chemical composition and constitution of the particle (molecule?) determining the exact arrangement. The arrangement typified by Fig. 2 is termed a "space-lattice." A glance at the figure is sufficient to show that it is nothing more or less than the spacial reduplication of a parallelepipedal cell, having particles at its corners. *Each crystal substance has a specific cell.*

FIG. 2.



Crystallisation is the union of free-to-move liquid or gaseous particles into a perfect, solid organisation. Crystal growth is a process of regular deposition from outside. Why such a growing crystal should take up a definite plane-polyhedral form, instead of forming rounded aggregates, is a question which invites speculation, but yields nothing profitable. In any case there is a simple mathematical relationship between the various faces on the most richly facetted crystal (the law of Haüy); there is an equally simple relationship between the external faces and the internal interlacing planes, or, in other words, between the faces and the form of the structural cell (the "law" or "principle" of Bravais). The nature of these laws need not be gone into. It will suffice to state that Fedorov deduces the

[1] For further information consult T. V. Barker, *Chemical News*, 1912, cvi., p. 199; Chemical Society's Annual Reports, 1913, x., p. 243; 1914, xi., p. 248; Times Russian Supplement, Feb. 26th, 1916, p. 11. I have in preparation a full treatise on the subject.

geometrical form of the cell from the facial development. All the faces are taken into account in this deduction. The process, then, is one of integration. The 20 (or more) angles on a crystal can now be rejected: *they are replaced by the angles of the cell.* These angles can be fairly easily classified in a book of three dimensions.

During the last ten years the whole of existing crystallographic literature has been brought under review by Fedorov and his work has been checked by his pupils, MM. Artemiev, Sokolov, and Barker. The chaotic mass of measurements and observations extending over a hundred years has been classified and incorporated into a one-volume "Index of the Crystal Kingdom," which will be published by the Petrograd Academy of Science. Proof-sheets of this monumental work are in my possession; without them the identification of salol could never have been effected.

Steps in the Process of Identification.

The steps involved in the identification of the salol crystal may now be briefly indicated. The measurement had occupied 30 minutes. The next five minutes were spent in plotting the results on a "stereographic map," which facilitates the study of the various angles (on this map the relative position of each crystal face is marked by angles of latitude and longitude originally read off from the goniometer). Twenty minutes were occupied in analysing the map, whereby three likely structural cells presented themselves as worthy of consideration. The following alternative lines of action were now possible: either to carry out certain graphical methods of calculation with a view to a final selection of that one of the three cells which satisfies most completely the Bravais principle, or to refer directly to the Index to see whether any of the three cells were included. The latter method was adopted as being easier. The third cell one had in view was, indeed, in the Index. On p. 691 there are no less than three substances having the cell in question—namely, salol, $HOC_6H_4CO_2C_6H_5$; potassium niobate, $K_{16}Nb_{14}O_{43}32H_2O$; and methyl di-isopropyl-sulphine hexachloroplatinate $[CH_3(C_3H_7)_2S]_2PtCl_6$.

We have evidently to probe the matter further. It need scarcely be stated that the intestinal origin of the crystal carried no weight in the decision as far as the writer is concerned. Integration of the crystal development had been extraordinarily effective; it had narrowed down the inquiry to three, crystallographically known, substances. But if there are three already known, why should there not be thirty unknown? In order to go further we have to abandon integration for differentiation; in other words, we have to go into details. The details are in the Index. On making a comparison of the list of faces developed on the three substances under consideration, there was a complete correspondence term for term with salol; not so with the remaining pair of substances. As a matter of fact, most crystalline substances enjoy little peculiarities. In salol the faces numbered 6, 9, 10 are not what one would expect to see developed from the standpoint of the Bravais principle: they are developed on all crystals grown in the laboratory; they were present on this crystal formed in the intestine. Again, the statement that there are three substances with identical cells is only true if we carry the angular measurements to an accuracy of $\frac{1}{2}°$ (30 minutes of arc), which is the limit of accuracy in graphical operations (unless they are carried out with such care as would involve a time better spent in exact trigonometrical calculations). The measurements of the crystal agree with those of "authentic" salol to a few minutes of arc. With regard to the more meticulous question whether the crystal is really some unknown (crystallographically, that is) substance, the reader may be assured that crystallographic experience is against this possibility. As has already been mentioned, confirmation of the truth of the purely crystallographic diagnosis was sought and obtained by a melting-point determination and by an examination of the optical properties, although such confirmation was hardly necessary.

The Future of Crystallography.

Although most precious results have frequently been obtained from the study of crystals (as witness, for example, Pasteur's capital discovery of the two forms of tartaric acid, the real basis of bio-chemistry), it must be admitted that the history of crystallography has not been a particularly happy one. Logically regarded, crystallography is a not unimportant branch of physical chemistry; it has, however, never been properly recognised by authorities, and consequently it has been doomed to a more or less precarious existence. The great development in recent years of the borderland between physics and chemistry must in any case gradually lead to a better appreciation of the "poetry of science," as crystallography has been so well termed; but the above account of one of its branches should make it clear that the science embraces a sphere of useful application in nearly all branches of knowledge, including those dealing with life-processes. How can this valuable adjunct be best turned to profit? It is obviously undesirable that a specialist in chemistry, physics, or medicine should attempt to become an expert in crystallography; if he is worth his salt his time is much better spent in exercising the arts towards which he has a personal inclination. He can, however, be of the utmost assistance to crystallography, and indirectly to his own subject, if he would only facilitate a more liberal recognition of its claims to be regarded as a worthy branch of inquiry. He can also be reasonably expected to coöperate in extending the usefulness of crystallo-chemical analysis. No substance can be identified unless it has been previously subjected to crystallographic investigation. It is evidently beyond the powers of the relatively small numbers of crystallographers to cope with substances as fast as they are turned out by synthetic chemists. Even if it were possible it would still be undesirable, inasmuch as the great majority of such compounds have their origin in a certain "superfluity of naughtiness" rather than in any real reasoning belief that the substance is likely to lead to the advancement of science and humanity; and the inclusion, in future editions of the Index, of a mass of *caput mortuum* would merely diminish its usefulness. It is therefore to be hoped that the chemist (in the wide sense of the term) will not take advantage of the ignorance of the enthusiastic crystallographer (who is, as a rule, only too willing to measure anything for the sheer love of æsthetics), but will confine his requests to such substances as are likely to have a direct influence on the development of science.

In conclusion, I wish to express my thanks to Sir William Osler and Professor W. H. Perkin for their genial interest.

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SPONTANEOUS RUPTURE OF THE SPLEEN.

WITH AN ACCOUNT OF A CASE DUE TO MALARIA AND ONE OF NECROTIC INFARCT WITH INTRAPERITONEAL HÆMORRHAGE SIMULATING SPONTANEOUS RUPTURE.

BY G. GREY TURNER, M.S. DURH., F.R.C.S. ENG.,
MAJOR, R.A.M.C. (T.F.).

AN experience of nine months' work in Mesopotamia has made me familiar with many complications of disease which may demand surgical interference. This has been especially so in the enteric infections and in those of the dysenteric group, but even in malaria the enlarged and softened spleen may give way, resulting in hæmorrhage into the peritoneal cavity, as pointed out in an annotation in THE LANCET of July 22nd, 1916. Although there were no symptoms in the first case to suggest surgical interference, it is easy to picture circumstances in which such interference might be necessary, as in the second case, which was, however, not strictly an example of spontaneous rupture. Incidentally, I should like to remark that both of the cases show the great importance of post-mortem examinations.

CASE 1.—*Spontaneous rupture of malarial spleen.*—Patient, seaman aged 35, an unusually big, strong man, admitted to British General Hospital at Basrah on June 17th, 1916. Ten days previously he had "reported sick" on account of pains in stomach, vomiting, and constipation, and had been treated with quinine for "fever." On admission he was a little anæmic and expression very anxious. Temperature 101·4° F., pulse 88, of very poor tension; tongue very much coated, and dry. Abdomen was flat, neither rigid nor tender; spleen easily felt below costal margin. Nothing abnormal discovered in chest. Malarial parasites found in blood; also mononuclear leucocytosis. On morning after admission temperature 102·4°, but no other change in condition; bowels had been well moved. By the evening he looked much worse, had vomited several times, and complained of difficulty in breathing, but there was nothing to suggest any abdominal development. On the 19th it was reported that during the night patient had become restless and delirious, and in early hours of morning had developed generalised convulsions, most marked in

arms and lower jaw, the teeth being constantly champed. Some cyanosis; pulse quick and feeble. Death occurred at 10 A.M. No response to quinine, either when given by the mouth or by intramuscular injection.

Post-mortem.—I made a necropsy five hours after death. Abdomen contained moderate amount of unclotted blood, fairly uniformly distributed over whole peritoneal cavity. In spleen pouch was a considerable amount of clot and a smaller quantity over right lobe of liver and in pelvis. The spleen itself was twice normal size, and on outer surface near upper pole were two small lacerations each about ¼ inch long and with pouting margins, as though produced by bursting of the structure. These punctiform ruptures were evidently the source of hæmorrhage, which was most abundant around spleen; no other cause could be found. There were no adhesions which might have been torn, thus giving rise to bleeding, and no signs of injury to overlying ribs or parietes such as might perhaps have been caused by patient falling out of bed, nor was there any evidence of embolism or thrombosis. The intestines did not show any of the lesions of typhoid or dysentery. Lungs congested, but no consolidation; heart and kidneys normal. The head was not examined.

In this case, so far as I was able to ascertain, there was no acute attack of abdominal pain, and though from the first the patient was obviously very ill, there was nothing to suggest any peritoneal lesion while the man was under my care.

Vomiting is quite common in malaria, and, I think, especially so in the type we met with in Basrah about that time. I certainly thought that he might be suffering from an enteric group infection, but that was more from a consideration of his general symptoms than from any local abdominal signs. I do not think that the accident of spleen rupture had much to do with the death of this patient, for his symptoms were exactly like many others in which a fatal malaria was of the cerebral type. Under ordinary circumstances spleen blood clots easily, and from my experience of hæmorrhage generally I was led to conclude that the blood coagulation-time is diminished under the climatic conditions prevailing during the hot weather in Mesopotamia. I believe that recovery without interference not infrequently occurs even in traumatic cases and would certainly have followed in this case had there been nothing else to account for death. I do not think that spontaneous rupture of the malarial spleen can be at all common, for though this disease was rife both at Basrah and Amarah beyond this case, in which it was proved, and one other in a Sepoy, in which it was suspected, the patient recovering, I have not come across another instance, nor have I heard of any in talking over the matter with my brother officers, though an enlarged and friable spleen was the commonest of the disclosures of the post-mortem room.

CASE 2.—*Enteric group infection with intraperitoneal hæmorrhage regarded as being due to spontaneous rupture of spleen and subsequently proved to be in association with infarction of that organ.*—Patient, aged 30, driver in R.F.A., admitted to British General Hospital at Amarah. I was asked to see him about 7.30 P.M., Sept. 6th, 1916, as a possible case of ruptured typhoid ulcer. The man had been very ill for five weeks with what was diagnosed as a fever of enteric group, and for previous two days temperature had been going up, attributed to a concomitant malaria. About noon of the day I saw him he first complained of abdominal pain and twice vomited, while his pulse became quick and feeble, but I could not elicit any history of a definite sudden onset. He had been given a dose of morphia, and as its effect passed off the pain recurred.

On subsequent inquiry I ascertained that this man was admitted to the hospital on August 12th with fever of 14 days' duration. He was very ill and was at once placed on "dangerous list." Temperature was of irregular type, as high as 102° F., and only occasionally touching normal. Pulse varied between 76 and 90; very poor in tension. Tongue dry and furred; bowels fairly regular. At that time spleen was not felt, but a little later its edge was detected two inches below costal margin. The blood, examined on several occasions, was always found negative for malaria; Widal test inconclusive. Patient continued in an unsatisfactory state and with irregular pyrexia, but little other change until Sept. 1st, when he complained of pain in left side of chest; patch of pneumonia found at left base. This did not appear to give him much additional distress, but temperature gradually rose, and on evening of Sept. 5th reached 103°, and on the 6th occurred the attack for which I operated.

When I first saw him the man looked exceedingly ill and was obviously in the later stages of some wasting disease. He was anæmic and slightly cyanosed and lay partly propped up in bed sweating profusely, with feeble pulse of 132 and temperature of 101°. He only made complaint of pain in abdomen, and especially in lower part. On examination I found belly a little distended; it did not move well on respiration and surface was blistered as result of hot applications. Some rigidity, but not marked, and mostly in the flanks and iliac regions. It was especially noticeable that, while splenic dullness was considerably increased, normal liver dullness was replaced by a resonant note and there was no dullness in flanks.

I could only agree with the diagnosis of probable rupture of a typhoid ulcer. Under local anæsthesia I made a small subumbilical incision in mid-line. As soon as peritoneum was opened free blood escaped and a piece of omentum that presented had some blood clot entangled in its meshes, but there was no gas. The lower ileum was free from any sign of ulceration or inflammation; mesenteric glands slightly enlarged. As there was no evidence of peritonitis or fat-necrosis I recognised that I was probably dealing with an example of spontaneous rupture of spleen. Patient was anæsthetised with ether and incision prolonged. Quite a large amount of free blood escaped, though not nearly so much as in most cases of traumatic rupture. On passing my hand up to splenic area I found a considerable amount of soft blood clot, and about the middle of its outer convex surface I felt what I took to be a rent about 1½ inches long, and running forwards towards anterior border. It was occupied by firm blood clot, and though evidently the source of hæmorrhage it was presumably not then bleeding. There were no adhesions. Nothing further was done beyond rapidly closing incision. Although patient was very ill, and caused Captain A. H. Haddon, who gave the anæsthetic, some anxiety, he really stood the operation quite well and became conscious during administration of subcutaneous infusion of saline.

At this stage I feel that I ought to explain why I did not expose the spleen or attempt to interfere with the rupture directly. The temptation to inspect the lesion was very strong, but patient was exceedingly ill and it would have necessitated either a prolongation of incision to epigastrium or a second independent incision below left costal margin. Having exposed the spleen, I would either have had to remove it or trust to suture or perhaps gauze-packing. Further, from previous experience I knew quite well that a moderate rupture of the spleen could be well trusted to take care of itself, measures having been taken to tide the patient over the catastrophe of the immediate blood loss, and I thought that the condition of the patient demanded these temporising methods. In the light of subsequent events I regret that I felt compelled to adopt this course, for I believe that the best interests of the patient would really have been served by running what then appeared the very much greater risk incurred in an effort to expose the spleen.

Films made from blood in peritoneum were examined for malaria, but the parasites were not found. Unfortunately no attempt was made to inoculate culture-media.

On the day after operation patient was fairly well and had almost completely recovered from the shock. Temperature 100° and pulse 122 and of better tension; there had been no vomiting. On Sept. 11th he had some loose motions, containing blood, and on the 12th the left leg was found to be swollen and œdematous; no albumin in urine and condition probably due to femoral thrombosis. By the 13th the tongue, which had been very dirty, was cleaning up; wound dressed and found healed; abdomen moved freely; no tenderness. On this day I noticed two hæmorrhagic patches on back of either hand about size of a sixpence; they appeared evidence of mild scurvy; gums absolutely healthy and no other confirmatory signs. Between the 13th and 21st condition varied considerably, and for some days he was very ill, with temperature between 100° and 101° and pulse about 110. I suspected a pelvic abscess, but this was not confirmed by rectal examination. On Sept. 16th he was exceptionally ill and temperature again suggested malaria, but plasmodium not found; he had several loose motions. In spite of negative blood examination he was given 15 grains of hydrochloride of quinine by intramuscular injection and next day seemed better, but improvement only evanescent. About this time dullness of left base increased, and I withdrew a small quantity of blood-stained fluid. Breathing gradually became more embarrassed, and I have no doubt that in later stages the fluid in left pleura increased very rapidly. About Sept. 29th he vomited; no complaint of abdominal pain; tongue clean and moist. A small subcutaneous hæmorrhage was noticed on left arm and for first time a thin red line along margins of gums. From this time progress was steadily downhill. Breathing became more and more rapid; some cyanosis. He took food badly, was delirious at night, and rapidly lost flesh. Death on Oct. 4th, just four weeks after operation.

Post-mortem.—I made a necropsy three and a half hours after death. Abdominal scar was stretched and of deep purple colour; when epidermis covering it was divided, deeper parts were found completely occupied by recent blood clot and without least evidence of union. Catgut sutures absorbed; no naked-eye evidence of sepsis.[1] The small intestine area and right side of abdomen presented appearances associated with aseptic absorption of free blood in peritoneum. Some soft shaggy vascularised adhesions were present over dome of liver and among coils of small intestines. Great omentum tucked up, or shrunken, so as to lie along lower border of colon. Both splenic flexure and fundus of stomach with left lobe of liver were adherent to one another and to parietes, obscuring splenic region. There was a collection of fluid in left extremity of lesser sac, and on separating adhesions to parietes, the latter was opened into, allowing about half a pint of very offensive, thin, pink-coloured fluid to escape. The cavity was the much diminished lesser sac, and in addition to the fluid there was some blood clot and the wall was covered by an attempt at granulation tissue. Right half of sac, including foramen of Winslow, obliterated. Spleen surrounded by small amount of same sort of fluid as occupied lesser sac. Organ very friable and presented two areas almost completely separated and recognised as necrotic infarcts. The larger area was a wedge-shaped mass of tissue, about 1½ inches in longest diameter (transverse to long axis of organ), and 1 inch in shorter. It lay so loosely attached to its bed that it fell out by its own weight when specimen was turned over. It was of a dirty yellow colour and had a ragged surface without any sign of repair, in fact it looked exactly what it represented—a mass of necrotic spleen tissue. The bed in which it had lain resembled the crater of a volcano, and was largely advanced towards repair, its surface being quite smooth as though

[1] This, I take it, was an example of "disunion," a phenomenon almost peculiar to scurvy. When the wound was dressed at the end of a week, it was found to be perfectly healed and on the sixteenth day it looked as though completely consolidated. Had it been in the ununited condition found post mortem, for any length of time before death, I should have expected it to have given way with prolapse of intestine. In addition to hæmorrhagic patches on back of hands and small hæmorrhage on left arm previously mentioned, there were also some petechiæ on skin of abdominal wall and on the limbs. In reflecting the structures from front of chest I also came across a small localised hæmorrhage in substance of pectoral muscle. Evidences of a mild type of scurvy were quite common in patients in the last stages of diseases like enteric and dysentery, in which feeding on sterilised foods for long periods had been necessary, and I always looked upon the condition as of similar origin to the scurvy rickets of young children (Barlow's disease).

covered by a layer of endothelium. The other infarct, at apex of spleen, was exactly similar though only half the size. Condition of splenic artery and vein was not carefully investigated. In left pleural cavity was about two pints of thin hæmorrhagic fluid, without any naked-eye evidence of infection. Anterior border of corresponding lung was loosely adherent to parietal pleura, while base was firmly glued to upper surface of diaphragm. On separating latter from the lung two large areas of purulent lymph were exposed, and there was a most offensive odour recalling that in gangrene of lung. Substance of lower lobe carnefied, but no real consolidation; infective process was limited to pleural surface, having evidently extended up through diaphragm. Right lung and pleural cavity normal. Little blood-stained fluid in pericardium; two hæmorrhagic areas on surface of heart. The organ itself was enlarged, principally due to increase in size of right side, which was crammed full of blood-clot. At extreme apex of right ventricle was a small mass of tissue about size of walnut, oval in shape and pinkish in colour, and entangled in bundles of heart muscle. Its central part was broken down into a little cavity containing creamy pus. No endocarditis, but heart muscle pale and flabby. Liver slightly nutmeg and fatty, but no infected areas, though tip of left lobe had formed part of wall of cavity containing infarct situated at upper pole of spleen. The lower four or five feet of ileum and greater part of colon were examined, but without discovering any trace of ulceration, recent or remote. Mesenteric glands only very moderately enlarged. No gross pathological changes in kidneys. Specimens of pus were examined from: (*a*) mass in right ventricle; (*b*) fluid around spleen; and (*c*) that in lesser sac. They all gave the coli reactions, probably indicating a general *Bacillus coli* infection.

I presume that in this case the course of events was thrombosis of some branches of the splenic vessels, followed by infarction, mild infection, and separation of the infarcted areas. It was probably when the latter process began that the hæmorrhage into the peritoneum occurred.

I am indebted to Colonel W. H. Starr for permission to use the notes of the first case, and to Lieutenant-Colonel J. R. Bond for a similar privilege with regard to the second, and to both for their interest and encouragement.

PRIMARY SUTURE AND UNION OF OPERATION WOUNDS OF THE URINARY BLADDER.

BY A. RALPH THOMPSON, CH.M. MANCH., F.R.C.S. ENG.,
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MUCH ingenuity has been exercised for some time now in devising more or less adequate schemes for dealing with an open suprapubic wound of the bladder. The wounds which result from operations of such a nature as suprapubic prostatectomy occur, of necessity, most frequently in middle-aged or old people. In those cases of suprapubic operation in which some apparatus is fitted in order to prevent the running of urine and chemical fluids over the adjacent parts the skin is very liable to become exposed to the dangers of sepsis and trauma. On the other hand, in those cases in which no such measures are adopted the constant wetting of the dressing and consequent evaporation are liable to give the patient cold and retard his recovery.

Owing to the constant care exercised by my dressers at Guy's Hospital during the past four years I have been enabled to perform a number of operations, such as suprapubic prostatectomy, removal of a vesical growth, and retrograde catheterism, with primary suture of the bladder wall and superficial tissues.

Primary union occurring in bladder wounds of an operative nature offers such tremendous advantages over other methods of dealing with bladder wounds, that I am inclined to think it should be aimed at more frequently than it is. Cases of enlarged prostate and growth of the bladder which demand operation are put off frequently, in my experience, by both patients and their medical attendants, because they dread the inconvenience, labour, trouble, and danger involved by an open wound of the bladder. If, then, this difficulty of the open wound in a bladder can be in a reasonable number of cases overcome, we may expect to see enlarged prostates more frequently removed, and growth of the bladder extirpated, not so much for the purpose of averting a distressing and painful death, as is too commonly the case at present, as for rendering life pleasant and happy.

Method.

The method adopted for securing primary union in the wound following upon a suprapubic vesical operation in my cases is as follows.

After the actual disease is removed, such as an enlarged prostate or a vesical growth, steps are taken to control and prevent hæmorrhage. This is frequently quite trifling in amount, but is occasionally severe. The bladder is filled with gauze sponges which are saturated with hot boracic lotion at a temperature of 120° F. After a little time the sponges are removed and liquor hamamelidis B.P. at a similar temperature is poured into the bladder and allowed to remain there. The quantity used is about 3 ounces. A coudé catheter is then inserted into the bladder viâ the urethra, especial care being now taken that the wound shall not be contaminated, the wound being covered with cyanide gauze. The point of the catheter is laid carefully in the bladder, about one-third up the vertical height of the bladder, and the position of the catheter at this level is carefully noted in its relations to the meatus for future use, as a catheter may slip even when tied apparently securely, and it is important that it should not do so unknown to the surgeon or his assistants. The bladder wound is then exposed, and sutures are applied as follows.

The two ends of the incision in the bladder are secured with Lane's forceps, and the edges slightly everted; fine catgut sutures are then placed through the muscle wall of the bladder, as close to the mucous membrane as possible, but not through it. Each suture is tied immediately after it is passed, but not cut until all are tied, as tension upon them helps to steady the bladder.

Some difficulty is usually experienced in inserting and securing the lower sutures, but this must be done as perfectly as possible. About six or seven sutures are thus inserted, tied, and cut. The sutured part is carefully palpated in order that any holes left by suturing may be discovered and closed. The fibrous and outer muscular coats of the bladder are now secured with thicker catgut sutures, inserted in the manner of Lembert, and carefully tied, especial care being taken, as before, with the lower part of the wound. The number of sutures is, as before, six or seven.

A small gauze wick is placed in the cave of Retzius, after this space has been carefully washed with boracic lotion. If the peritoneum has been retracted upwards it is brought back into its original position on the front of the bladder, or even "encouraged" down a little lower. I think it helps the incision in the bladder wall to heal more readily. The abdominal wall is then sewn up with two rows of catgut sutures, the deeper row being placed through the rectus and pyramidalis muscles and anterior layer of the rectal sheath on each side, and the more superficial row through the superficial fascia and skin. Care should be taken to place at least one superficial suture through the skin and subjacent tissue below the wick of gauze laid in the cave of Retzius, as the edges of skin are thus much more likely to unite when the gauze is removed than when the gauze has no suture below it. I believe this to be an important point. The usual gauze dressings are then applied and the catheter is secured in the urethra.

After-treatment of wound.—The patient is returned to bed and the after-treatment is begun at once. (I always now have a spinal anæsthetic given in these cases, so that any immediate treatment necessary is more easily performed than when the patient is unconscious.) The dresser of the case washes out the bladder with normal hot sodium citrate solution; this prevents any blood from clotting. The irrigation is done with the help of a special apparatus, which I always use for the irrigation of the bladder, and which consists of two funnels, each holding four ounces of fluid, connected by long indiarubber tubes to a Y glass tube which in turn is connected up with the catheter by a short length of rubber tubing. There is in connexion with the two long tubes a double spring clip, so arranged that pressure opens one indiarubber tube and at the same time closes the other, or *vice versâ;* and thus first the clear irrigating fluid only mixes in very small quantity with the fluid from the bladder; and, secondly, the amount of fluid from the bladder can be easily compared with the amount injected. Care is taken that only four ounces of fluid are introduced, and drawn off, at each irrigation. Between the intervals of irrigation the catheter is connected with a drainage-tube having as long a drop as possible. These irrigations are continued at gradually lengthening intervals until the washings are free from blood, which usually happens within three days. For the next two or three days boric acid lotion is substituted for the sodium citrate solution, which has done its work in preventing clotting of the blood in the bladder. The gauze wick is removed upon the second day. The catheter is removed at the end of a week or 10 days, and the patient allowed up at the end of 14 days without a catheter. The sutures are removed after 14 days.

Results.

The results of this method of treating operation wounds of the bladder are detailed in the accompanying table of 13 cases. Even where a small fistula formed, it was quite small and rapidly healed, and in the case which was, relatively speaking, a failure, I do not regret having attempted primary union, as the open wound healed up remarkably quickly—I fancy much more quickly than if primary union had not been attempted.

Summary of Cases of Primary Union after Operation upon Urinary Bladder.

Total number of cases ...	13	Partial success	2
Average age of patients...	58	Success	10
Failure...	1	Deaths	0

These cases have been reported by me as, although they are too few to form general conclusions from, they do show that much of the trouble incident to an open bladder wound may be overcome by obtaining primary union. I do not at present attempt primary union in cases in which (1) there is marked cystitis, (2) there is considerable renal insufficiency, (3) bleeding cannot be sufficiently arrested at the time of operation, or (4) too much unavoidable damage to the bladder wall has been done.

The good result indicated in the table is due chiefly to the assiduous after-care of my dressers, who, however, realise that, after the first two or three days, there is infinitely less trouble involved than when the wound is left open. Moreover, one is greatly assisted in these cases by the temporary partial suppression of renal activity which takes place, as I think, immediately after a major operation upon the bladder, and which may last for as long as 24 hours. If, however, the success of these operations, as indicated below, is in future practice justified, then it may be said that bladder surgery has advanced a considerable step forward, and been robbed of half its terrors.

Group I., Stricture of Urethra.

CASE 1.—Male, 67. ? Enlarged prostate. (Dr. L. G. Reynolds, Balham.) Suprapubic cystotomy. General anæsthetic. Primary suture of bladder and abdominal wall. Primary union. Discharged well from hospital three weeks after operation. Cystoscoped five weeks after operation. Greyish-white slough seen at fundus of bladder. Small urinary fistula formed, which healed up in ten days' time. Partial success.

CASE 2.—Male, 41. Impassable stricture. (Sir A. Fripp.) Suprapubic cystotomy. Retrograde catheterism. Internal urethrotomy. General anæsthetic. Primary suture of bladder and abdominal wall. Discharged within four weeks of operation. Union perfect. No. 14 English catheter is being passed without difficulty. Success.

Group II., Suprapubic Exploration of Bladder.

CASE 1.—Male, 35. ? Vesical neoplasm; none found. Suprapubic cystotomy. Primary suture and union of wound. Deep part of wound closed firmly. Slight retraction of skin edges. Delayed union of skin, but no urinary fistula. Partial success.

Group III., Growth of Bladder.

CASE 1.—Male, 37. Papilloma of bladder. Suprapubic cystotomy. Removal of growth. Primary suture and union. Discharged well at end of third week from operation. Success.

CASE 2.—Male, 69. Large papilloma at base of bladder. (Sir A. Fripp.) Suprapubic cystotomy. Removal of growth. Diathermy of base of bladder by Dr. C. E. Iredell. Primary suture and union of wound. Hæmatoma formed in perineum; this in part broke down, and small, quite temporary, perineal sinus formed. Success.

CASE 3.—Male, 57. Papilloma of bladder. Suprapubic cystotomy. Spinal anæsthesia. Removal of growth. Much bleeding and clotting of blood. Bladder wound reopened and left open eighth day. Recovery. Failure.

Group IV., Uncomplicated Enlarged Prostate.

CASE 1.—Male, 56. (Major Wallace Kemp, R.A.M.C. T., Kensington.) Enlarged prostate. Suprapubic cystotomy; general anæsthetic. Removal of prostate. Primary suture and union. No complications. Success.

CASE 2.—Male, 70. Very much enlarged prostate. Suprapubic cystotomy. Spinal anæsthetic. Removal of prostate. Primary suture and union. No complications except slight orchitis. Success.

CASE 3.—Male, 65. Enlarged prostate. Suprapubic cystotomy. Spinal anæsthetic. Removal of prostate. Primary suture and union. No complications. Success.

CASE 4.—Male, 64. (Mr. H. J. B. Cane, Belvedere.) Enlarged prostate. Suprapubic cystotomy; spinal anæsthetic. Removal of prostate. Primary suture and union. No complications. Success.

CASE 5.—Male, 65. (Mr. H. Cardin, Ingatestone.) Enlarged prostate. Suprapubic cystotomy; spinal anæsthetic. Removal of prostate. Primary suture and union. No complications. Success.

CASE 6.—Male, 66. (Dr. J. Steed, Staunton.) Patient very fat man. Enlarged prostate. Suprapubic cystotomy; spinal anæsthesia. Removal of prostate. Primary suture and union. No complications. Success.

Group V., Enlarged Prostate with Vesical Calculus.

CASE 1.—Male, 64. (Mr. Cane, Belvedere.) Enlarged prostate. Suprapubic cystotomy; spinal anæsthetic. Removal of prostate and three large stones. Primary suture and union. No complications. Success.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

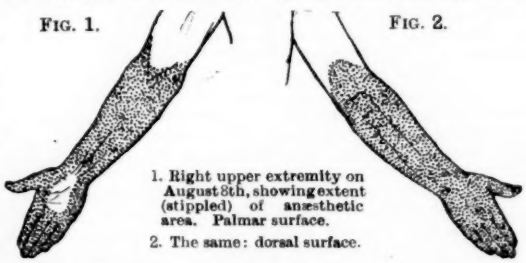
A CASE OF SYPHILITIC PERIPHERAL NEURITIS.

BY HAROLD E. THORN, M.B., B.S. LOND., M.R.C.S. ENG.,
TEMPORARY SURGEON, ROYAL NAVY.

THE following case is of some interest as far as the accurate diagnosis is concerned.

The patient, a signalman, aged 25, in H.M.S.——, in the Eastern Mediterranean Squadron, joined this ship on July 21st, 1916, from Malta. Six days later I saw him, and he gave me the following history. He had had primary and secondary syphilis in March, 1916, having been infected at Malta, and had been treated in Bighi Hospital, Malta, with two injections of galyl, one in April and the other in May. He had no mercury, but thought that he had had potassium iodide for a few days. He was examined generally on July 27th, and no signs of syphilis were found. Mercury in the form of cream (1½ gr.) was injected into the buttock and this treatment was continued weekly until Oct. 12th. Only eight days after the first injection (August 4th) the patient complained of weakness in the right arm and hand. On examination a typical right main-en-griffe was found; the right hypothenar eminence was definitely wasted and there was cutaneous anæsthesia over areas corresponding to part of the distribution of the sixth and eighth cervical and first dorsal nerves to the right forearm and hand. Massage and passive movements were ordered to be applied to the right arm daily and he was given light duty. A few terra-cotta spots were found on the trunk; these were not very definite and nothing further developed in that region. No salivation, diarrhœa, or vomiting was present. No sign or history of alcoholism or injury could be found, and as regards the former the man had not been ashore, so was exceedingly unlikely to have had excess of alcohol. No swelling in the neck or axilla could be detected; there was no blue line on the gums or other sign of plumbism; no history suggested diphtheria, influenza, tubercle, enteric, or malaria, nor was dengue, Malta fever, beri-beri, or leprosy apparent. On August 7th and 8th the patient was further examined and besides the signs found on the 4th the following details were noted: Weakness of the extensors of the right wrist; anæsthesia over the right forearm and hand, analgesia being the most extensive (see Figs. 1 and 2); touch and temperature not lost

FIG. 1. FIG. 2.

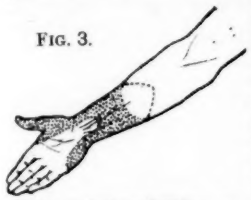


1. Right upper extremity on August 8th, showing extent (stippled) of anæsthetic area. Palmar surface.
2. The same: dorsal surface.

quite so extensively; relative hot and cold sensation unimpaired over rest of arm; circumference of right forearm a quarter of an inch smaller than left at its largest diameter, half an inch smaller at the middle. (The patient is right-handed.) The right supinator jerk was absent; the left present Both knee-jerks were present and the rest of the central nervous system was normal. No spinal disease could be detected. The patient complained of pain, and there was a discharge from the right ear; acute otitis media was found on that side. He stated that he had had recurrent similar attacks in the same ear throughout his life. Examination of the urine showed it to be neutral; specific gravity 1014; no albumin or sugar. On August 19th the membrana tympani of the right ear had healed completely after treatment locally by syringing with izal, ½ drachm to the pint, and the application of boric powder. Power in the right hand was slightly better. On the 22nd a note was made that sensation was improving. 31st: Sensation over ulnar and median nerve distribution improving. Sensation remained impaired over the dorsal area supplied by the radial (see Fig. 3). Sept. 21st: Analgesia

remained only over the radial nerve distribution; some wasting of forearm still apparent. Oct. 6th: Sensation had become normal and the muscles were improving. From Oct. 12th to Nov. 16th injections of mercury were discontinued. On Oct. 19th the right arm was practically normal and massage was discontinued. The patient was able to write perfectly well. Since then he has not had any trouble with the right arm. Injections of mercury were restarted on Nov. 16th and given weekly until Dec. 22nd. Now he is having fortnightly injections. Owing to the movements of the ship no Wassermann reactions were obtainable.

FIG. 3.



Right upper extremity on August 31st, showing diminution in extent (stippled) of anæsthetic area. Palmar surface. The dotted line indicates the upper limit on the dorsal surface.

From these observations there does not appear to me to be any doubt that the cause was syphilis; the only question about the diagnosis is whether there was peripheral neuritis due to syphilis or whether the lesion was situated anywhere else. The fact that complete recovery ensued upon mercuric treatment appears to confirm the impression that the lesion was in the peripheral nerves. The absence of pain makes pachymeningitis improbable, but this is also unusual in syphilitic neuritis. Hyperæsthesia was never present, which is unusual for neuritis of this origin. Presumably no central nerve cell lesion was present, as complete recovery would not then have occurred. The anæsthetic areas did not correspond accurately to any definite nerve roots, but nearly to peripheral nerve distributions; the palmar cutaneous branch of the median was apparently never affected.

A CASE OF FULMINATING MENINGOCOCCUS SEPTICÆMIA.

BY FREDERICK C. PYBUS, M.S.DURH., F.R.C.S. ENG.,
SURGEON TO THE HOSPITAL FOR SICK CHILDREN AND ASSISTANT SURGEON TO THE ROYAL VICTORIA INFIRMARY, NEWCASTLE-ON-TYNE.

IT would appear from the following case that death within 13 hours from meningococcal septicæmia is a calamity against which therapeutic agencies seem futile.

The patient, a girl aged 3 years, admitted to hospital as an abdominal emergency case and as such seen by me, was apparently in good health when, at about 11 A.M. on Dec. 19th, 1916, she was seized with abdominal pain and vomiting. The pain was sufficiently severe to make her cry out. The bowels were opened normally at about 2 P.M.

On admission to the Royal Victoria Infirmary, Newcastle, at 6 P.M., the child appeared very ill. Temperature 97·4° F.; pulse almost uncountable. She was slightly cyanosed and complained of abdominal pain. The house surgeon reported the case to me at about 8 P.M., stating that the child was gravely ill, that he thought he could feel a mass in the right hypochondrium, and although no blood had been passed he thought it might be a case of intussusception. I thought for a child to be so ill in such a time a massive internal strangulation would be a more probable diagnosis. I saw the patient at 9 P.M. and found her unconscious. The skin was burning hot and the temperature was found to be 103°, the pulse being uncountable. Cyanosis was present and the pupils were dilated. The abdomen presented no abnormal signs, except that the liver edge was readily palpable. On further examination petechiæ and small hæmorrhagic patches were found on the lower extremities. No signs of meningitis were present. I considered the case to be one of intense septicæmia, probably due to the meningococcus. The patient died three hours later.

Owing to the absence of Professor Stuart McDonald, the post-mortem examination was made by Mr. H. M. Johnston, the resident medical officer, and myself. The brain and spinal cord presented no signs of meningitis. The chest organs were normal. The abdominal organs were normal, with the exception that the liver appeared to be abnormally red in colour and that petechiæ were visible in the mucous membrane of the stomach and intestines. Cultures were made from the ventricular cerebro-spinal fluid and from the heart blood. The culture from the former was contaminated, but the heart blood gave a pure culture of the meningococcus.

Newcastle-on-Tyne.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ELECTRO-THERAPEUTICS.

Dosage in Radium-therapy.

A MEETING of this section was held on May 18th, under the presidency of Dr. G. HARRISON ORTON.

Dr. J. C. MOTTRAM and Mr. SIDNEY RUSS contributed a paper on "A Study in Dosage in Radium Therapy."

The patient, a woman, aged 56, was the subject of carcinoma of the breast, very slow-growing, with a large number of subcutaneous nodules on both sides of the trunk, a total of 80, which made it possible for some to be treated in various ways, while others were left as controls. The primary growth in the breast was near the nipple, in the superficial tissues. The primary growth was treated with X rays, but without benefit; the skin over the growth ulcerated, involving the nipple. The ulcer became covered with a dry crust, in which condition it remained until the present treatment by radium was commenced. Three mgm. of radium were applied over an area of 45 sq. cm., screened through 1 mm. of lead and two layers of lint. Shortly after its removal a transient erythema was noticed, and subsequently the crust covering the ulcer fell off, showing the skin beneath healed. The carcinomatous mass had not disappeared, and that was the present condition of the growth. Some of the nodules which had been under experimental treatment disappeared. There had been no glandular involvement nor metastasis in other organs. This condition, called by some "disseminated scirrhus," was supposed to spread by the lymphatics. The changes in the skin observed formed a progressive series. The earliest change was an erythema, which occurred in almost every case. In many cases a slight scaliness was seen, but the radium produced no other change. In a few nodules there was transient œdema, and in some the application was followed by erythema and pigmentation, the latter persisting for months. The effect of radium on the nodules varied from complete disappearance to no appreciable change. In some there was caused a stoppage of growth, either temporary or permanent. It was not possible to measure the nodules from week to week, owing to their varying depth; the only criterion which could be employed was the time at which a nodule disappeared. The two main aspects of a study of dosage in radium were those on surface condition and the effects on subcutaneous nodules and the skin covering them. A question which the observers set out to answer was: Supposing the skin were made to absorb the same amount of beta ray energy as gamma ray energy, were the biological effects equal? To answer that they adjusted the radiation so that the first millimetre of skin absorbed as much beta energy as it absorbed gamma energy. This meant a pouring on to the skin of a large quantity of gamma energy owing to its absorption being so much less. As tissue became penetrated beta energy fell off very rapidly, so that at about a centimetre depth the available energy was only 1 per cent. to 2 per cent. of the original intensity. The gamma energy at that depth was about ten times as much; these rays also produced more profound changes in the skin than did the beta rays. The series of symptoms observed with varying doses of both kinds of irradiation, and embodied in a table, included erythema, scaliness, pigmentation, exudate, &c. These observations were all made with a dose of 7 mgm. When the dose was much diminished—namely, to 1/80th—and the time of application correspondingly increased, some of the more definite changes previously noted did not occur: only erythema and scaliness, sometimes pigmentation, but not exudate, and the disappearance of the nodule. A sequential study concerned the effects observed through various screenings.

SECTION OF OTOLOGY.

Cases and Specimens.—Diseases of the Ear and Recruiting.

A MEETING of this section was held on May 18th, under the presidency of Mr. H. J. MARRIAGE.

Dr. DAN MCKENZIE gave an account of 250 specimens of temporal bone which had been handed to him by Mr. A. L. Whitehead, of Leeds, and which he had examined in order to obtain measurements of the Fallopian canal. The results he presented in tabular form, arranged according to the age and sex of the patients. He obtained from the specimens

some thirty interesting facts. 35 per cent. of the bones were, clinically, of the infantile type. The information thus obtained had an important bearing on the performance of the radical mastoid operation. 50 per cent. of the specimens from people over 50 years of age showed dehiscence, probably due to the osteoporosis which occurred with advancing years.

Mr. J. F. O'MALLEY showed a remarkable case of cerebro-spinal fluid escaping from the ear during a period of 12 months. The patient, a man aged 27, had a mastoid operation performed 10½ years ago. After six years a polypus formed and was removed. During the ensuing two years polypi were removed twice, and again 18 months ago. Soon after the last of these operations the ear began to drip, and was worse at night. When Mr. O'Malley saw the patient the right external meatus, from which the dripping took place, was blocked by a smooth cyst-like swelling. This was found to be the scar-tissue lining of the mastoid cavity, raised by the cerebro-spinal fluid from the bony facial ridge and antral cavity. He reopened the mastoid and cleared out the old scar-tissue, but he could not localise the bony defect. As the dressings were still soaked all of them were removed, when the operation cavity was found to be bathed in pus. Despite careful treatment, the cerebro-spinal fluid continued to soak through the dressings for six weeks. The cavity, however, was now more free from pus, and he dusted daily with boric powder and packed firmly with sterile gauze. The point of escape of the fluid was found to be the posterior part of the attic. Even as late as 3½ months from the operation 1½ dr. of fluid collected in four hours. The patient must have lost about 1½ gallons of the fluid in 3 months.

Mr. C. E. WEST, Mr. SYDNEY SCOTT, Mr. R. LAKE, Mr. H. J. BANKS DAVIS, and Dr. KELSON discussed the case.

Mr. SCOTT showed a case of Squamous-celled Carcinoma of the External Auditory Meatus and Tympanum in a woman aged 22.

Captain G. J. JENKINS opened a discussion on the subject of Diseases of the Ear in Relation to Recruiting, which was deferred to the next meeting of the section.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

Hallucinations in the Sane.

THE usual quarterly meeting of the association was held at the rooms of the Medical Society of London on May 15th. Lieutenant-Colonel D. G. THOMSON, R.A.M.C., presiding, made sympathetic reference to the decease of the following members: Dr. R. B. Smyth, Dr. T. Seymour Tuke, Dr. William Rawes, Dr. J. W. A. Murdoch, Captain G. Swinnerton Blandy, R.A.M.C., M.C.

Dr. ROBERT HUNTER STEEN read a paper on Hallucinations in the Sane, dividing his subject into (*a*) hallucinations the result of agencies operating upon the brain or nerves, and (*b*) those of mental origin. Among the former he placed toxins, both exogenous and endogenous, disorders of brain circulation, disease of end-organs, after images, and brain diseases of obscure pathology, such as epilepsy and migraine, and in the second category he placed cases in which, so far as present knowledge goes, a physical agency was unknown, including suggestion, hypnotism, crystal-gazing, clairvoyance, hysteria, somnambulism, multiple personality, hypnagogic visions, dreams, hallucinations in history, collective hallucinations, so-called telepathy, and hallucinations the result of a complex. Among the drugs which may produce this effect he included alcohol, absinthe, ether, stramonium, belladonna, hyoscyamus, nitrous oxide, chloroform, mercury, lead, and santonin. In the author's view hallucinations did occur in the sane, and cases met with in the sane should be intensively studied. This study was especially necessary in borderland or hysterical cases, and there seemed to him no reason to think that hallucinations in the sane differed from those in the insane, and each could be produced by toxins. He therefore thought it probable that hallucinations in the insane could be better studied from the psychological rather than the physiological standpoint. In every case presenting hallucinations he considered that some process of dissociation was at work, and this was supported by the fact that hallucinations were met with in cases of multiple personality.

Dr. C. A. MERCIER sent a contribution to the discussion, and the subject was further debated by Sir GEORGE SAVAGE, Dr. E. S. PASMORE, Dr. CARSWELL, and the PRESIDENT, and Dr. STEEN replied.

Reviews and Notices of Books.

Health and Empire. By FRANCIS FREMANTLE, F.R.C.P., F.R.C.S., Lieut.-Colonel, R.A.M.C. (T.F.). Second edition. London: Heath Cranton, Limited. 1917. Pp. 369. 5*s.* net.—In 1903 Colonel Fremantle took advantage of prolonged leave from official duties and made an extensive tour of the world. Starting by acting for a winter as a plague medical officer in Lahore and Amritsar, he visited other parts of India, Burma, Singapore and Malay, Cochin-China, Hong-Kong, Canton, and Shanghai, reaching Japan shortly after the outbreak of war between that country and Russia. After a short experience of war in Northern China he turned eastwards to San Francisco, went up to Vancouver, passed through Winnipeg, Chicago, and St. Louis, leaving the second winter free for visits to Paris, Geneva, Berlin, and Hamburg. Throughout his travels he was engaged upon a personal investigation of public health conditions of the world under various climates and rules, and he summed up his experiences in an interesting and valuable book which was reviewed in THE LANCET some six years ago. In this book his special aim was to persuade the public of the significance of public health problems as modified by various races and systems of government under which they arise, and his suggestion to form a permanent Advisory Council in London of experienced health officers, one from each of the Dominion Governments, is worth recalling at the present time, when the centralisation of public health administration is occupying so much attention.

Serving now with the Army in Salonica, Egypt, and Mesopotamia, he has found that the book will be very pertinent to the times that must succeed the war, and in a second edition, practically unaltered, repeats his urgent message that the future of our Empire must rest not on treaties and tariffs, armies and fleets, so much as on organised defence against disease. In the preface to the second edition he writes from Mesopotamia, quite in ignorance how apposite the words would be: "In civil government, while each department may have its medical adviser and him essentially a preventer of disease, so must there be one health department, call it what you will, to direct all the medical and sanitary services of the country and to be generally responsible for the health of the nation." Medical opinion is now solidly of this belief, and Colonel Fremantle's informing book will supply lay readers with unanswerable evidence that throughout our vast Empire the prevention of disease should be the first care.

The Weird Adventures of Professor Delapine of the Sorbonne. By GEORGE LINDSAY JOHNSON, F.R.C.S. London: George Routledge. 1917. Pp. 344. 6*s.*—Mr. George Lindsay Johnson appears to have been much impressed by some visits which he paid to the Salpêtrière Hospital with the view of inquiring into the phenomena of spiritualism. The weird adventures, which he narrates, were told to him as actual occurrences by "a professor of world-wide fame," and he has written them down with disguises of names, the object being "to clothe the real facts with a halo of romance." We credit Mr. Johnson with believing what he was told, as he alludes to the professor's story as "real facts," but we think that he displays more capacity for believing than he is likely to find among his readers. That will be due partly to the fact that he is quite unable to tell a story in a way that might be expected to produce any effect upon the intelligence of others.

The Bird of Life. By GERTRUDE VAUGHAN. London: Chapman and Hall. 1917. Pp. 309. 5*s.* net.—Much of this book is the result of accurate observation, but the heroine would have been a more interesting person if the exact career which she leads had not been, in its various episodes, led by the different heroines of other twentieth century novels. The book is very well written.

The Cameroons. By ALBERT F. CALVERT, F.C.S. London: T. Werner Laurie. 1917. 200 plates. Pp. 82 and xxxi. 6*s.* net.—As a faithful study of the origin and development of the colonial power of Germany this small book makes instructive reading. The text is very brief, but full of facts, while many of the numerous reproductions of topical scenes are explapatory of it. We did not find the author's map, plate 200, very helpful.

THE LANCET.

LONDON: SATURDAY, MAY 26, 1917.

The Study of Function in Disease.

THE routine examination of large numbers of adolescent and adult males necessitated by the needs of the naval and military services of this country has served to focus attention upon two very old and difficult problems—namely, the significance of cardiac murmurs and the test of the functional efficiency of the heart and circulation, particularly in those persons in whom the cardiac physical signs show some departure from the normal. Among the many important contributions to the study of the circulation made by Sir JAMES MACKENZIE, none are of greater practical value than his analysis of the varieties of cardiac irregularity with their significance, leading to insistence upon the necessity in all cases of apparent cardiac abnormality of applying some test of the functional capacity or efficiency of this organ from a mechanical point of view. His forceful and downright championship of these matters has involved him in more than one controversy. We publish in another column a long letter from him replying to critics, who accuse him of lack of reverence for those great clinicians of the past, by whose careful observation and record of symptoms and physical signs the foundations of our knowledge of heart disease were laid and the application of the newer methods to the study of function rendered possible. In commenting on the recent Lumleian lectures we suggested that the utilitarian value of recent cardiac work had escaped some of the critics of modern research, but the pioneer has his failings also. With Sir JAMES MACKENZIE'S letter we are in accord, but we feel that he has some of the impatience and intolerance of the pioneer. He pays a generous tribute to past workers, but we confess we do not quite understand his statement that in the literature in the English, French, and German languages he has not found a single case where the condition of the heart was clearly detailed and the reaction intelligently described.

Five years ago the late Sir JAMES F. GOODHART delivered a thoughtful and arresting Harveian oration before the Royal College of Physicians of London on the Passing of Morbid Anatomy. He pointed out the change in our point of view of pathological problems, developed within his own memory, whereby the processes of disease rather than their terminal effects were studied. The fruitful nature from the practical standpoint of this change must be apparent. It is in some such sense that we construe the main thesis of Sir JAMES MACKENZIE'S letter as a plea for the study of function rather than of state in disease; in other words, he would have us treat the condition of the patient with some disordered organ or system as a dynamic and not as a static problem. With this view we are in full sympathy, the more so that it is obviously of wider application than in the field of cardiology. The study of the patient, of his symptoms, and of their variation in relation to special demands made upon his several organs is a truly scientific mode of investigation, and it has already led to practical results. It is also a wholesome reaction against placing too great stress upon laboratory methods in the diagnosis and treatment of disease, because it inculcates a close study of the patient and the due perspective of symptoms, signs, and laboratory results. Sir JAMES MACKENZIE has frequently and in forceful manner insisted on this conception in relation to disorders of circulatory function, and his teaching is now generally accepted and followed. It is necessary for correct diagnosis and useful prognosis and for effective treatment to observe the patient and the variations in his symptoms and physical signs under conditions of effort or even stress.

Many other examples of the fruitful results of the application of this method of studying function and organic reactions will doubtless occur to our readers, but we may perhaps draw attention to a few of them. The study of renal function in health and disease by urologists has helped to raise this branch of surgery almost to the rank of an exact science, and has led to highly satisfactory advances in diagnosis and treatment. The functional efficiency of either kidney and the adequacy of the total excretory function can now be measured accurately, with the result that diagnosis, the decision as to what cases are suitable for operation, and the effects of treatment have all been greatly improved. The problems in medical diseases of the kidney are complex and treatment is difficult owing often to the irreparable nature of the damage, but there can be no doubt that there is here a fruitful field for research. In diseases of the lungs, more especially tuberculosis, the same principles are being applied, haltingly perhaps, while the search for an adequate specific treatment goes on. Hygienic-dietetic treatment in skilled hands demands the close personal study of each individual patient and the adjustment of the patient's daily life according to the state of his lesions and his response to effort, whether in the form of graded walks and rest or graduated labour. The day has long gone by when prognosis and treatment in this disease were appraised from the physical signs only; to-day symptoms, the temperature-chart and its reactions to rest and effort, the physical signs, the sputum, and even, where practicable, the blood reactions are all duly weighed in dealing with the outlook of the patient, his chances of recovery, and his ability to return to ordinary life or to work. A wide general recognition of these facts is desirable, as it would make for earlier and more accurate diagnosis, and for more careful selection of cases for sanatorium and other modes of treatment. The field for similar methods in diseases of the nervous system, both functional and organic, widens as diagnosis becomes more accurate and our knowledge of function of nerve structures increases. The principle will be applied to the symptoms produced by every organ in the body, and we cordially welcome Sir JAMES MACKENZIE'S insistence on the

scope for truly scientific research in the clinical field. There has been too great a tendency to regard clinical medicine as worked out, and to look upon the laboratory as the only place for accurate and scientific inquiry.

The Children's Crusade.

THE destructive power of infant mortality is now generally admitted, and the popularising of measures for dealing with it is the special concern of the National Baby Week Council, which held its first meeting last week. The week from July 1st to 7th is to be set aside for the following objects: To arouse the civic sense of racial responsibility in order to secure to every child his proper birthright of mental and bodily health; to inform the public of what is already being done for mothers and young children by existing agencies; and to indicate possible achievements if every citizen assumed his proper responsibility. On the need for such propaganda work opinion is not divided, and public attention has already been called to one great destroyer of child life. Sir WILLIAM OSLER, in an oration before the Medical Society of London, which we print this week, goes over the ground again in regard to the influence of venereal diseases on child production and child life. As a baby-killer the gonococcus has no great rôle, but as a misery producer it is the king among germs, responsible for 30–40 per cent. of all cases of congenital blindness and for a large proportion of sterile marriages. The case is still stronger against the *Spirochæta pallida*. Syphilis has long been the despair of the statistician, but Sir WILLIAM OSLER feels free to attribute 25 per cent. at least of the 100,000 stillbirths occurring each year in England and Wales to SCHAUDINN'S spirochæte; and of the 18,000 children dying annually before completing the first week of life, the practical pathologist and physician, he tells us, requires no statistician in order to enable him to attribute 95 per cent. of these deaths to syphilis. Venereal disease is one of the foes against which the children's crusade must be conducted to the death.

Other reasons responsible for infant mortality are variously assessed by different observers and schools of thought. In a further volume[1] just issued of a report to the Carnegie United Kingdom Trust, Dr. E. COEY BIGGER, the Medical Commissioner of the Local Government Board for Ireland, enumerates ten factors in the order of importance which he attributes to them in relation to the welfare of infants. He takes, as his first factors, the care of the mother before, during, and after labour and the advice given as to the management of the child. The factors which immediately follow—the economic conditions of the family, the domestic surroundings of the infant, the extra-domestic surroundings of the home, the health and habits of mother and father—have, for Dr. BIGGER, less importance than supervision of the mother's health and friendly advice tendered to her in regard to her child. On this point practical unanimity prevails amongst those who have had large experience in child-welfare work. It is therefore to the health visitor that the National Baby Week Council looks as one of the main agents of child welfare. A compendious report just issued by the Local Government Board for England gives the most recent statistical information. Just over 600 whole-time health visitors are now available in Great Britain to visit 700,000 babies, and only 800 to 900 infant-welfare and maternity centres are in existence where the Council consider 8000 to 9000 are needed. Hence, one of its main objects is to stimulate local authorities in dealing with these matters. One London borough is noteworthy for its refusal, recently emphasised, to appoint health visitors at all on the ground that no evidence has yet been adduced indicating that such appointments would accelerate the progressive fall in the infantile death-rate now taking place in the borough. It is, however, very difficult to interpret the remarkable drop in the figures for infant mortality occurring between 1915 and 1916 in the great towns and urban districts of the Tyne on any other ground than that of increased care for mother and child. Economic conditions have long been good and housing has not materially altered during the time. The National Baby Week Council should have no difficulty in making out a good case for the multiplication of health visitors.

The discretion of the medical profession in the treatment of infantile disorders will not be infringed by the employment of the agency of child welfare centres, while the whole campaign of National Baby Week is based on the coöperation of the general practitioner. Health visitor and welfare centre are what Dr. J. W. BALLANTYNE has called "listening posts" to detect impending danger and ward against it. In and by them health principles are inculcated; their object is to maintain health and not to treat illness. In so far as they are successful in their aim they strike at the root of medical practice; but this is inevitable, and the medical man himself is always in the position of a person engaged in sawing off the branch of the tree on which he is sitting. The Association of Infant Welfare and Maternity Centres does not affiliate local centres to itself unless and until they have a medical person in charge of the infant consultations attached to the centre. Organisation of the child-welfare campaign by some central authority will have the advantage of securing a broad view of the complicated factors—medical, hygienic, social, racial—at their beneficent work, while not excluding the coöperation of the general practitioner at the periphery. To us any local welfare scheme is unthinkable without the active interest and coöperation of all the general practitioners in the district. Nor does the memorandum of the Women's Coöperative Guild on the national care of maternity, as we understand it, necessarily clash with the interests of general practice. The Guild pleads for a strong Central Maternity Department at the proposed Ministry of Health and for the compulsory appointment of maternity committees by local public health authorities. The plea is ably framed, and such action may well be another line of attack in a campaign of many fronts.

[1] Two volumes of this report were noticed in THE LANCET of May 5th, p. 693.

Annotations.

"Ne quid nimis."

THE TREATMENT OF THE WAR CRIPPLE: STATEMENT BY THE MINISTER OF PENSIONS.

THE position of the war cripple has for long been a somewhat obscure one, and a flood of fresh light has been shed upon it by the important statements made last week by Mr. G. N. Barnes, M.P., Minister of Pensions, in answer to questions put to him by members of a deputation from the British Medical Association. The deputation included the Chairmen of Council and of the Insurance Acts and Hospitals Committees, and the medical secretary of the Association. The Insurance Commissioners were also represented. With regard to the status of the discharged disabled soldier under treatment, Mr. Barnes said that the question of the retention of the men in military hospitals and under military control might be regarded as settled. The War Office had agreed to keep the men in military hospitals as long as room could be found for them there, to give them certain curative and manual treatment, and on discharge to hand them over to the care of the local Pensions &c. Statutory Committees. These committees would also be responsible for the men when, on the conclusion of the war, many military hospitals were disbanded. For the treatment of the war cripple after the war three alternatives would be present: first, continuance of treatment at the military hospital, where this continued to exist; secondly, at a civilian hospital, if one was available; thirdly, failing both of these, treatment by the ordinary practitioner or the specialist according to the requirement of the individual case. Mr. Barnes added that he was committed to the provision of special treatment for the disabled man, whether within or without a hospital, and to the expense of such treatment, quite apart from any domiciliary treatment to which the man was entitled as an insured person. The small number of non-insured discharged men would, he said, be dealt with also by the Insurance Commissioners, retaining the same choice of doctor as insured persons possess. In regard to the additional cost of such domiciliary treatment, Mr. Barnes said that it had been decided to watch events and to compare the results with the experience of pre-war years. Approved Societies had assumed, he said, that there would be additional sickness and consequent increased financial risk. On the other side it had been urged that the open-air life and physical training of the Service would result in a diminished sickness incidence. Mr. Barnes laid on the House of Commons the primary responsibility for the fact that the medical profession was so slightly represented on the central and local Pensions Committees, adding that he was taking steps to remedy the omission. A circular, he said, had been issued by the central committee advising all the local bodies to avail themselves of the services of the practitioners in their district, and in particular to appoint medical men on the disablement subcommittees. Every local committee, he said, should have its medical adviser. For the Central Advisory Committee Mr. Barnes welcomed the nomination of three or four persons by the British Medical Association, with the addition of a consulting physician and surgeon nominated by the English Royal Colleges. Mr. Barnes's statement heralds, we hope, the beginning of an intelligent and comprehensive treatment of a difficult problem.

TRENCH FEVER AND TRENCH SHIN.

WE publish in another column an interesting contribution to the pathology of trench fever by Dr. H. Moreland McCrea, which tends to confirmation of the view that this condition is caused by a spirochæte, since observations on the Wassermann reaction made by Dr. W. E. Carnegie Dickson gave a positive result in the vast majority of cases, and treatment by galyl and grey oil gave relief in some cases and rendered the Wassermann reaction negative. In THE LANCET of March 3rd we commented upon the observations of Professor Riemer, who obtained spirochætes from the blood in this disease and was able to cultivate them, though he hesitated to assert that the spirochæte was the cause. Dr. McCrea and Dr. Carnegie Dickson's observations take the proof a stage further, and if the spirochætes are constantly demonstrated, or if they can be proved to be infective in similar fashion for animals, the demonstration will be complete. It seems to be clear that the more chronic forms of trench fever are less typical than the acute form, the description of the latter by different observers being singularly uniform. The paper we published in last week's issue of THE LANCET by Lieutenant-Colonel Graham Chambers on Trench Shin raises an interesting question. The condition, as he admits, presents many points of resemblance to certain chronic cases of trench fever and is by some observers considered to be of this nature. It would be of interest to find out if the spirochæte found in trench fever is also present in trench shin or if the Wassermann reaction is positive in cases of the latter condition. It is possible that the symptom-complex seen in trench fever may be produced by more than one specific organism. Lieutenant-Colonel Chambers regards trench shin as an infectious fibrositis, and his suggestion seems probable. We shall await observations upon the blood in these cases with interest, as they should throw light upon this question.

THE RE-EDUCATION OF THE BLIND.

AT the Annual Congress of the Ophthalmological Society the proceedings on one afternoon took the form of an inspection of St. Dunstan's Hostel, Regent's Park, the magnificent property placed at the disposal of the Blinded Soldiers' and Sailors' Care Committee by Mr. Otto Kahn. In the course of this visit Sir Arthur Pearson, the chairman of the Committee and President of the National Institute for the Blind, opened a discussion on the employment of the blind, to which Mr. Arnold Lawson and Mr. H. B. Grimsdale, among others, made useful contributions, and the whole subject has now received wide illumination by the issue of the report of the work of St. Dunstan's Hostel during the year ended March 31st last. At this date the blind inmates of St. Dunstan's, including the numerous annexes which have been added to the central mansion, numbered 354, while new accommodation has been provided for nearly as many more patients. The War Office has arranged now that all soldiers with badly damaged eyes shall reach St. Dunstan's

through the 2nd or 3rd London General Hospitals, and part of the success which has crowned systematic treatment has no doubt been due to the prompt sympathy and spirit of comradeship with which the new comers are received. Their re-education begins at once with simple lessons in net-making and Braille; in the workshops, where the scheme of re-education next takes them, their instruction is mainly given by men who some few months back were themselves blinded on the battle-field; and beyond the workshops expert tuition is supplied in poultry farming, massage, Braille shorthand and typewriting, and telephone operating. The report makes exhilarating reading. It is clear that these men, who have experienced what is popularly regarded as the severest physical disability which can be met with, accept under the pervading spirit of St. Dunstan's Hostel the optimistic view that though handicapped heavily they are not penalised out of all competition, but, on the other hand, may be enabled by patience to give a very good account of themselves in the race of life. We congratulate Sir Arthur Pearson and his energetic scientific coadjutors and administrative staff on the beneficent results of their efforts.

TRANSIENT PARALYSES IN MEASLES.

IN the spring of 1916 Dr. E. Aaser [1] had 190 cases of measles in Ullevaal Hospital. Seventy of these patients were adults, and had the disease in a mild form; the only complications were otitis media in four instances and pleurisy in one. The remaining 120 patients were children, of whom 65 had measles mildly, 55 in a severe form. Cultures of the nasopharyngeal mucus showed the presence of diphtheria bacilli in 13 of these 55 patients, and tracheotomy became necessary in 5, with 3 deaths; in addition, 11 of the children died from pulmonary complications. Dr. Aaser gives details of two other children who developed retention of urine and various muscular paralyses when their attack of measles was at its height, and makes no mention of the occurrence of diphtheria in either of them. The first case, a boy aged 9½, was sent in with the diagnosis of acute poliomyelitis; he had a well-marked measles eruption which had been present for a week, and for six days he had had extensive paresis of the muscles of the trunk and legs, together with urinary retention and overflow, but without any pain or hyperæsthesia. No complete paralysis could be found in the affected muscles, there was no atrophy, common sensation and sensation of heat were normal. The urinary retention lasted 17 days and was relieved by catheterisation. The muscular pareses improved after the first week, and a month after their onset the child could walk indifferently well. The second paretic patient was a child aged 4, who developed measles on April 24th, urinary retention on the 27th, and was admitted to hospital on the 29th with extensive pareses without any disturbances of sensation. Recovery from the pareses and retention followed as the measles eruption died away. Discussing the diagnosis in these two instances, Dr. Aaser says they may perhaps be regarded either as cases of abortive infantile paralysis with an initial morbilliform eruption, or as examples of measles combined with acute poliomyelitis. A third possibility—namely, that they were cases of measles with transverse myelitis, has also to be considered. Dr. Aaser notes that another case of measles occurred in a sister of the first patient a fortnight after the onset of his attack. He points out that the signs of paresis came when the attack of measles was at its worst and vanished with the rash, and he concludes that both his patients certainly did have measles. Again, neither child had the almost pathognomonic stiffness of the neck, profuse sweating, and hyperæsthesia seen in acute poliomyelitis; hence, he is inclined to think that, although a morbilliform eruption may occur in either the prodromal or the paralytic stage of infantile paralysis, and although a transient retention of the urine occurred in about a quarter of the 80 or 90 cases of acute poliomyelitis treated in his hospital four or five years ago, neither of his two patients had more than a severe and abnormal attack of measles. He has heard from a colleague of similar cases of paralysis in the course of measles, and asks for further information on the subject.

[1] Tidsskr. f. d. Norske Laegeforening, Christiania, 1916, xxxvi., 1074.

SPIRIT DUTY GRANTS TO VOLUNTARY HOSPITALS.

THE conditions under which voluntary hospitals may obtain supplies of spirit are announced, the question having been under the consideration of a Departmental Committee appointed by the Treasury since February, 1916. A circular, together with the forms for application, has been issued to the hospitals, pointing out that grants from the Exchequer are now available in relief or part relief of the duty paid upon spirit used solely for medical or surgical purposes. The grants are not available to institutions conducted for gain, but are intended to give relief in respect of payments of duty involved by the use in voluntary hospitals, supported by charitable contributions, of duty-paid spirit or drugs containing duty-paid spirit for medical use. Methylated spirit or spirit obtained free of duty under Section 3 of the Finance Act, 1902, does not come within the purview of the return, nor does the spirit used exclusively for scientific purposes, and the concession to medical requirements excludes potable spirits—e.g., brandy and whisky. In making a return figures are required as to the previous consumption of spirit based on the calendar year 1914, while grants may be applied for retrospectively as regards the years 1915 and 1916. Applicants are required to set out what proportion of spirit was allocated to out-patients and to in-patients, and the Local Government Board expect to be informed of the method by which such allocation was made, the data on which it rests, and the definition of "new out-patient" adopted by the hospital. A copy of the printed report of the hospital is asked for in regard to each of the years 1914, 1915, and 1916 respectively, and when the printed reports do not show separately the receipts other than from charitable contributions, a statement of such receipts is required. As to the category of charitable contributions, those principally excluded from this are subsidies from State or municipal funds, payments made to the hospital in respect of the supply of nurses, by patients, or by the War Office or Admiralty connected with the accommodation of sailors or soldiers. To sum up, the returns come under four headings: (1) Quantities of alcohol used in the year ending Dec. 31st, 1914, for medical and surgical purposes only; (2) amount of solution of iodine 2 per cent. made with duty-paid alcohol, if not

made in hospital; (3) the proportion of the total amount of 90 per cent. alcohol represented by the above uses for (*a*) in-patients and (*b*) out-patients, and the average amount of duty-paid alcohol 90 per cent. represented by the above used (*a*) per in-patient, (*b*) per out-patient; and (4) the receipts for the years 1914, 1915, and 1916 respectively from other than charitable contributions.

AURICULAR FLUTTER DISCOVERED BY RADIOSCOPY.

IN the *Journal of the American Medical Association* of March 17th Dr. G. W. Holmes and Dr. P. D. White have described a case in which auricular flutter was discovered in what appears to be a novel manner—by radioscopy. A painter and paperhanger, aged 62 years, was referred to the Massachusetts General Hospital for diagnosis. He had been well until four months previously, when attacks of pain in the region of the umbilicus began. They were most frequent in the early morning, awaking him about 2 o'clock and compelling him to rise and pace the floor. Gradually the pain had become more persistent and was present much of the time. Hot applications gave some relief. There was no nausea or vomiting. No relation could be discovered between the time or kind of the meals and the pain. Yet the patient complained of indigestion, was afraid to eat much, and had lost 30 lb. in the four months. He was slightly constipated. There was no dyspnœa or præcordial pain. On examination he was pale and under weight. All the teeth were artificial and the tongue was coated. Percussion showed slight enlargement of the heart. The action was regular and rapid (115 to the minute). The sounds were faint and clear. Radioscopy after a bismuth meal did not show any abnormality of the gastro-intestinal tract. The right and left borders of the heart were then clearly outlined, when the left was seen to be pulsating regularly at the rate of 115 to the minute and the right at twice that rate. Auricular flutter was diagnosed, and the diagnosis confirmed by the electrocardiograph, which showed auricular flutter with a 2:1 a.-v. block. Right vagal pressure increased instantly the grade of the block, bringing out clearly the separate auricular deflections. The case suggests a possibly fruitful form of investigation in an obscure group of cases.

MEDICAL MUSEUMS.

LARGE and important questions came up for discussion at the recent annual meeting, held in New York, of the American Section of the International Association of Medical Museums. This section represents the leading medical museums and laboratories of the United States and Canada, and is presided over by Dr. O. Klotz, of Pittsburgh, Pa., Dr. Maude E. Abbott, of McGill University, being secretary-treasurer. The session opened with the despatch of a telegram to Washington placing the services of its workers and resources in its special field of research at the disposal of the National Committee in the present emergency. The establishment of a central bureau for the permanent preservation of the results of scientific research, especially histological material, to be used for purposes of study by scientific workers throughout the country, was brought forward by Dr. M. C. Winternitz, of Baltimore, and a committee appointed to organise such a bureau. A discussion took place on the clashing of the time of meeting in New York of the four societies of kindred nature—viz., the American Association of Pathologists and Bacteriologists, the American Section of the Medical Museums Association, the Cancer Society, and the American Association of Immunologists. It was resolved that some sort of federation should be attempted, so as to present subjects of common interest to combined audiences. A number of papers were read on museum and laboratory technique, museum teaching, the proper presentation of the results of medical research, and kindred matters. The International Association, of which the American Section is but a part, includes in its membership most of the museum curators in this country. Most successful meetings of this Association were held in London during the International Medical Congress of 1913. The Museums Association has done much to improve the technique employed in preserving and mounting of specimens. This matter has a considerable importance at the present time, for it is necessary for the progress of military surgery that a complete record should be made of the wounds and diseases suffered by our soldiers.

THE NATIONAL COMMITTEE FOR RELIEF IN BELGIUM.

THE United States Government has assumed responsibility for the work of the Commission for Relief in Belgium, and it has been decided that the National Committee for Relief in Belgium will suspend its appeals for subscriptions to the British public. Donations received after June 1st will be held to provide for emergencies now unforeseen in connexion with relief in Belgium. This course of action is in accordance with the suggestion made by Mr. H. C. Hoover, chairman of the Relief Commission, who is now in Washington, and has the approval of His Majesty's Government and the Belgian Minister. During the existence of the National Committee, whose second annual meeting will be held at the Mansion House on June 15th, over £2,400,000 have been subscribed through its medium for the relief of Belgium. As will be seen from the letter of Dr. H. A. Des Vœux in another column, the work of the Belgian Doctors' and Pharmacists' Relief Fund continues without interruption.

TALC IN TABLETS.

Mr. Albert E. Parkes, F.I.C., has been examining medicinal tablets and finds that many of them contain quantities of talc sufficient, he suggests, to cause gastro-intestinal disturbance. Mr. Parkes states that in the process of manufacture of compressed tablets it is generally necessary to mix with the powdered drug after granulation a so-called lubricant to ensure the mass flowing freely from the hopper to the dies and also to prevent the finished tablets from sticking to the dies and to each other. Various agents have been used for this purpose, one of which is talc, or French chalk, in the use of which it is generally advised to limit the amount to 1 or 2 per cent. Many of the cheaper varieties of tablets on the market were, however, found to contain talc in amounts far exceeding this. Mr. Parkes's attention was first called to the composition of soda-mint tablets, a sample of which had caused unpleasant symptoms. They were found on analysis to contain 5·5 per cent. of insoluble matter which proved to be talc.

Fourteen different samples of these tablets were then purchased from shops in various localities, and on examination

12 of these were found to contain talc, and while three contained from 1 to 2 per cent. only, the remaining nine samples contained the following amounts respectively: 2·1, 2·6, 2·8, 3·5, 4·0, 4·6, 5·4, 5·5, and 6·5 per cent. The tablets containing the smaller amounts were better compressed and of superior finish, so that the larger amount of talc could not be justified on manufacturing grounds. The worse varieties were purchased loose and were, no doubt, cheap imitations of well-known brands. The price varied from 2*d.* per ounce for the inferior samples to 4d. for the better qualities, which were supplied in bottles. Other compressed tablets were then bought and investigated such as potassium chlorate, potassium bicarbonate, potassium bromide, ammonium bromide, lithium citrate, nux vomica, quinine sulphate, calomel, aspirin, salol, antipyrin, phenacetin, and phenacetin and caffeine, and a sample each of milk tablets, bismuthated magnesia, and indigestion tablets. Twenty samples in all were examined, and ten of these, which comprised the cheaper varieties of well-known tablets, contained the following percentage amounts of talc: Nux vomica, 7·8; calomel, 5·7; aspirin, 8·1, 14·8, and 18·6; salol, 3·4; antipyrin, 1·9; phenacetin, 0·5; bismuthated magnesia, 6·0; indigestion tablets, 8·0. (The two last samples are of special interest as the tablets were recommended for digestive trouble.)

The varying amounts found tend to show that talc is used indiscriminately. It does not appear to be absolutely essential, as the tablets of certain well-known firms of manufacturers were free from it or contained it in minute quantities only. In conjunction with others,[1] Mr. Parkes has previously called attention to the practice of using talc in excessive amounts as a coating and ingredient of pills. Although no injury to health has been definitely traced to the ingestion of this substance, authorities are agreed that its unnecessary and excessive use is objectionable. In 1909, for example, the Local Government Board in a pamphlet[2] called attention to the growing habit of polishing cereals such as rice and barley with talc, and the danger to health which might follow from their use as food when so treated, and Lowe and Taylor, in THE LANCET of June 18th, 1910, report a case of pancreatic calculus in a man attributed to the consumption of rice polished with talc. Talc is a silicate of magnesium, and is almost insoluble in strong acids. The use of finely-powdered glass as a constituent of a food or drug would be unhesitatingly condemned, yet the two substances are almost indistinguishable microscopically. The ingestion of such inert siliceous matter in any but minute quantities may be attended with some risk owing to the irritation which it is liable to set up. It would be interesting to learn, Mr. Parkes concludes, if any of the victims to appendicitis and intestinal complaints have been in the habit of consuming food or drugs containing talc.

WE regret to learn the death of Dr. Major Greenwood, whose activities in the cause of Poor-law reform and medical politics generally are well-known to all our readers.

THE House of the Royal Society of Medicine, 1, Wimpole-street, London, W., will be closed on Whit-Monday, May 28th.

[1] Parkes and Roberts, Analyst, 1911, 389; Parkes and Major, Phar. Jour., 1914, 712.

[2] Report of the Inspector of Foods, No. 8.

DONATIONS AND BEQUESTS.—By the will of the late Rev. Henry Whitehead Moss the testator left £1000 to the Salop Infirmary and £500 to the Eye, Ear, and Throat Hospital, Shrewsbury.—The late Miss Hooper, of Leamington, has left by will legacies of about £5000 or £6000 to the Birmingham and Midland Hospital for Women and the Warneford Hospital, Leamington.—The late Mr. Richard Holder Luckett, of Erdington, Warwick, has bequeathed £1400 among six Birmingham hospitals.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

TUESDAY, MAY 22ND.

THE General Medical Council commenced its session at its offices, 44, Hallam-street, W. Sir DONALD MACALISTER, the President, was in the chair.

New Members.

Dr. Edward Coey Bigger took his seat on the Council as Crown nominee for Ireland, and Mr. Holburt Jacob Waring, M.S., F.R.C.S., as representative of the Royal College of Surgeons of England.

The President's Address.

Sir DONALD MACALISTER then delivered the presidential address. He said:—

Medical practitioners and medical students continue to be called up for military service in large and increasing numbers. Of both, the numbers remaining for medical duties at home, and for the future recruitment of the profession, are so reduced as to cause some misgiving. The Professional Committees appointed under the Military Service Act in Great Britain, and the analogous Central Committee in Ireland, have done strenuous and successful work in supplying military requirements on the one hand, and in providing for the claims of civilian practice on the other. Their powers are limited; yet their energy and resource, and the general willingness of the profession to endure all things for the common cause, have helped them to overcome many obstacles. Difficulties, however, remain, which the existing organisation may be unable to meet.

The question whether the time has come for a more effective system of professional "mobilisation," that is, for a temporary measure of general control, extending to all practitioners, and directing their distribution according to the nation's need for service, has been brought by several medical bodies before Mr. Neville Chamberlain, the Director-General of National Service. He invited me, as your President, to take the chair at a Conference of representatives of the Professional Committees and of certain Government Departments held on March 14th and 15th in London. Definite proposals on the subject of the better distribution of our resources were unanimously adopted, after full discussion, by the Conference. It is understood that these proposals are under consideration by the Government; but so far I have not learned what action has been taken upon them. A similar Conference took place at the same time with representatives of the British Dental Association. Mr. Tomes and I, at the request of the Director-General, were present. The conclusions arrived at have also been communicated to the Government; but again we are unaware of the result.

In the meantime the Secretary of State for War, under pressure of a sudden emergency, has decided to apply the compulsory provisions of the Military Service Act to all medical men of military age in Great Britain. At first the application was made in a form that practically nullified the efforts of the Professional Committees to safeguard the civil population. On being made aware of this untoward result, Lord Derby modified the form of his requisition, and so restored to the Committees the opportunity of exercising their functions under the Act. I understand that now, with the support of the profession in general and of the authorities, these Committees are again busily occupied in finding a practical solution of the national problem; though the difficulties of the problem are not growing less. The sources of supply for service abroad and at home are, in fact, becoming severely straitened; and many branches of ordinary civil work must of necessity suffer curtailment. It is, in my opinion, doubtful whether, without fresh legislation, the present powers of the authorities concerned will suffice to cope with all the demands of the situation. The position of affairs, as apprehended by those who have most carefully examined it, has been clearly placed before the National Service Department and the Government. With them, not with the profession, now lies the responsibility for the next step. The loyalty to national duty hitherto shown by medical practitioners as a body gives assurance that to the limit of their power they will respond to further calls should the needs of the country make further calls imperative. But to ensure the best results from their devotion a closer coördination of competing authorities, and a more effective control of the actual distribution of medical services at home and abroad, are now much to be desired.

At the request of the Director of Recruiting I have obtained, from the deans and registrars of medical schools in the United Kingdom, a return of the number of students actually pursuing medical study in January, 1917. The results have been communicated to your Emergency Committee and to the Government. The detailed figures are given in the minutes of the Executive Committee for Feb. 26th, 1917. It appeared from the return that, while in May, 1916, the whole number of medical students was 6103 (including 1379 women), in January, 1917, the whole number was 6682 (including 1735 women). As might be expected, the increase was mainly in the first and second years. The fourth and final years, taken together, were stationary. The third year, which will supply the practitioners of 1919, numbered in January only 572 men and 261 women. Since February, however, a fresh call, extending to one group of medical students not classified as "fit for General Service," has reduced still further the numbers I have given. It is now clear that, certainly in the years 1918 and 1919, and probably in the present year, 1917, there will be a serious falling-off in the number of practitioners added to the Register. In the years 1920 and 1921, however, we may expect an increase in the number of registered practitioners, both men and women. The Director of Recruiting, in making his calls on the student youth of the nation, has had all these facts before him, and I have to acknowledge that he has given them the consideration we should expect from an officer who is himself familiar with the requirements of medical education. The conditions of paper-supply and labour have delayed the issue of the Minutes and the official Registers. A new impression of the British Pharmacopœia, 1914, will presently be required, and the cost to the Council will be considerably augmented; but in view of the national importance of the work it will not be expedient to propose the raising of the selling price beyond that fixed by the Treasury in 1914.

The use of glycerine for munitions of war has imposed close restrictions on its employment in pharmacy. Sugar also is not to be had without difficulty; and prescribers have been advised to avoid ordering the official syrups as vehicles or adjuvants. The Pharmacopœia Committee is awaiting definite information on these matters from the Government Departments immediately concerned. The Council may think it expedient to empower the Committee to act officially on its behalf in regard to the question, should the necessity arise.

In pursuance of a resolution of the Council of the Pharmaceutical Society of Great Britain, the Privy Council has issued an Order which places, in Part I. of the Poisons Schedule of the Pharmacy Act, 1889, emplastrum plumbi and like preparations of lead, whether sold as diachylon or otherwise. This Order will have the effect of restricting the sale of this poison for internal use, and so of diminishing a serious public danger.

Two Government measures now before Parliament include provisions which have recently formed the subject of representations by the Council. The Venereal Disease Bill, 1917, prohibits under penalties anyone not a registered medical practitioner from treating such diseases, and from prescribing or advising remedies therefor. It moreover prohibits all persons from offering by public advertisements or announcements to treat patients, or to prescribe, advise, or recommend medicines or preparations of any kind, in relation to venereal disease. The first prohibition will apply to any area within which an approved scheme for free treatment is in operation. The second will apply to the whole kingdom. The Criminal Law Amendment Bill, 1917, extends the Indecent Advertisements Act to non-professional announcements or advertisements, which suggest the use of drugs or appliances for specified purposes of an objectionable kind. The Council has long desired such reforms, and will welcome these enactments.

In response to an invitation from the Lord President of the Privy Council the Council has submitted to the Government a memorandum on the present state of the law respecting the practice of dentistry, both in this country and in the British Dominions.

In the Union of South Africa a measure is now before Parliament which is intended to have the effect of prohibiting altogether the unqualified practice of medicine, including dentistry, throughout the Union. As a federal University of South Africa has been established, possessing the power of conferrieg medical degrees, we may expect before long a request for the application to the Union of Part II. of the Medical Act, 1886. When reciprocity is thereby arranged with South Africa, another step, and that practically the last that remains, will have been taken towards the medical confederation of the Empire. Our allies Italy, Japan, and Belgium already stand in similar relations with this country: and it may be that the Council's next duty will be the endeavour to bring about some form of reciprocity with other allied and friendly nations, where the standards of medical education and qualification are not inferior to our own.

The Government has appointed a committee to inquire into the position of natural science in the educational system of Great Britain, especially in secondary schools and universities, and the President and the Chairman of the Students' Registration Committee were accordingly asked to give evidence. We attended on March 13th and furnished the committee with full information on the Council's functions and activities, together with statistics and estimates, based on facts within the Council's knowledge, concerning the present and prospective supply of medical and dental students and practitioners, and the provision for their instruction in pure and applied science. The relations between the professional curriculum and secondary education, both general and scientific, were naturally discussed with the committee. I explained that the Council had recently widened its regulations so as to admit of the recognition, for purposes of registration, of "Senior" Preliminary Examinations accepted for matriculation in the Faculties of Arts and Science; but that the content of the "Junior" Examinations, accepted from candidates for registration who had not completed a full course of secondary education of the "Senior" standard, was still to be settled by the Council. This question may come up for further consideration on a report from the Education Committee, and perhaps from the Dental Education and Examination Committee also. It is much to be wished that the result of the Government committee's recommendations may be the establishment in England of a system of school leaving certificates, based on well coördinated plans for secondary education applicable to the whole country. The Council has repeatedly expressed its sense of the need for the introduction of such a system. Apart from its obvious national advantages, it would go far to free the Council from the task of appraising a multitude of preliminary examinations in school subjects, which the existing want of system has forced us to undertake in the interest of professional efficiency.

The Finance Committee will be in a position to report that in 1916 the income of the several Councils exceeded their expenditure by over £1000. The surplus is, however, much less than that for 1915, and somewhat less than the average for the preceding seven years. It is not to be expected that it will recover its former level for some years to come. Meanwhile all accrued charges for our new building have been defrayed from the accumulations of past years, and all available balances have been invested in War Loan Stocks.

Owing to the incidence of Whit Monday on May 28th it will be highly inconvenient for the Council to sit beyond Saturday of this week. But I foresee no difficulty in completing by that day all that we have to do at this session.

Other Business.

It was formally intimated that medical reciprocity had been established with the Province of Manitoba.

The Council appointed its committees. The Executive Committee consists of Dr. Norman Moore, Dr. Taylor, Mr. Tomes, Dr. Langley Browne, Mr. Hodsdon, Dr. Norman Walker, Sir John Moore, and Sir Arthur Chance. The Penal Cases Committee is as follows: Mr. Tomes, Sir F. Champneys, Dr. Norman Walker, and Sir B. Windle.

Dr. F. Taylor was appointed junior treasurer.

The Council adjourned.

WEDNESDAY, MAY 23RD.

The Council was engaged during the whole sitting in considering complaints against medical practitioners.

LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.—The annual general meeting of the London and Counties Medical Protection Society, Limited, was held at the offices of the Society, 32, Craven-street, Strand, London, W.C., on May 16th. Colonel E. C. Bensley, who was in the chair, in proposing that the annual report and balance-sheet be received and adopted, delivered a short address reviewing the work of the society during the past year. He referred to the action taken by the society in supporting its members in difficulties which had arisen between them and the military authorities in regard to payment for examining recruits and to the work which had arisen through defects in the machinery of the National Health Insurance Act. The resolution adopting the annual report and balance-sheet was carried unanimously, with expressions of gratitude to the general secretary and the solicitors. It was unanimously resolved—

That as from Jan. 1st, 1917, at the end of each year payment should be made to any member of council—not a salaried official—residing more than four miles from Charing Cross, of first-class return railway fare, provided he has attended not less than half the meetings of the council or committees of council to which he has been summoned.

Colonel Sir John Rose Bradford, the President of the society, the treasurers, secretaries, and auditors were all re-elected.

DIFFICULTIES IN THE ADMINISTRATIVE CONTROL OF TUBERCULOSIS.

BY JOHN GUY, M.D. GLASG., M.R.C.P. EDIN., D.P.H. CAMB.,
ASSISTANT MEDICAL OFFICER OF HEALTH AND TUBERCULOSIS OFFICER, EDINBURGH.

IN the departmental (Astor) report on tuberculosis some of the most perplexing problems connected with this disease are handled with a delightful simplicity. Early cases are to be cured in the sanatorium. Working capacity is to be regained at a colony. Advanced cases are to be segregated in a hospital, and for the sake of completeness it might be added, the dead are to be buried in a cemetery.

Wholehearted attempts to deal with this disease on the lines indicated in the report soon reveal the fact that there are profound problems connected with this disease which are not easily solved, and, indeed, some appear at present almost insoluble.

From the clinical standpoint cases of tuberculosis are classified into three grades—early, intermediate, and advanced—but from an administrative point of view they might be classified as non-infectious and infectious. In such a classification the basal idea is the safety or otherwise of the community, but the patient himself is not necessarily thereby lost sight of. The aim of the administration should be to prevent the non-infectious from sinking to the ranks of the infectious, and, if possible, to make the infectious non-infectious, or at least render them harmless to the community.

The Non-infectious Class of Cases.

The non-infectious cases are divisible into three very distinct classes: (*a*) Early cases where the tuberculous process has not advanced to the breaking-down stage; (*b*) cases where the tuberculous lesion is old and is in a healed or cicatricial condition; and (*c*) cases where a cicatricial lesion exists complicated by the presence of some other pulmonary disease, such as bronchitis, emphysema, silicosis, &c.

It is not always easy to distinguish clinically between these separate sets of cases, and it is too commonly assumed if a lesion be detected in a lung that it is a commencing one requiring active treatment. Patients with cicatricial lesions in their lungs are excellent cases for sanatorium or other form of treatment, and they do almost as well as those assumed cases of pulmonary tuberculosis where, in fact, no lung lesion exists.

When the pulmonary condition is reckoned to be of recent origin the best form of treatment is undoubtedly a residence in a good sanatorium, although many do equally well in their own homes. In the majority of instances perfect recovery may be expected. Occasionally, however, cases occur where the disease progresses in spite of all treatment, and passes on through the infectious stage to a fatal termination.

The difficulties, clinical and administrative, are great where these cicatricial lesions are complicated by the presence of other pulmonary diseases, such as bronchitis, &c., and these cases are very numerous; unfortunately, there is always a demand for sanatorium treatment for them. The medical attendants are glad to get rid of these cases for a time, and the patients and their friends are anxious to try anything that gives promise of relief. While it must be admitted that in some of them there is marked improvement by a residence in a sanatorium, on discharge they soon fall back into their old condition. The only method of dealing with them is to admit them to the sanatorium for a short period of observation and determine the cause of the illness. If it be found that this is due to bronchitis, &c., and that the tuberculous focus is inactive, then the patient should be discharged as not suffering from tuberculosis.

The administrative procedure is clear when the curable cases are under consideration. They should be kept in a sanatorium until cured. The carrying out of this prescription is not, however, quite so simple as it appears. In the first place, the patients, after a term of residence, often feel so well that they insist on returning to work before a cure is complete, and nothing but force will detain them. If compelled to remain against their will, they mope and are discontented, and further progress toward recovery is extremely unlikely. In the second place, family considerations compel many to return to work too early. When a breadwinner is laid aside the family income is often hopelessly insufficient and the wage-earner is compelled to return to work prematurely in order to satisfy the clamant need of the family. In the third place, when the mother is ill difficulties equally great present themselves. The children often cannot be cared for satisfactorily in her absence, and the mother insists on returning home to her duties long before she is able to do so. The problem here at present is often quite insoluble and the mother returns to her work until utterly unable to perform it.

How the Administrative Difficulties may be Met.

Here, then, are three separate administrative difficulties which have to be faced. If the patient is curable then he ought to be cured, and this must be kept prominently in view when attempting to solve the various problems. When the patient wishes to return home because he feels so well that he assumes he is cured, in the great majority of instances he can be persuaded to spend the requisite time by the sanatorium superintendent. Compulsory retention is quite useless, and a wise and tactful superintendent can usually accomplish the desired end by personally dealing with the patient. When a breadwinner is laid aside and is compelled to return prematurely to work the only satisfactory solution appears to be that the family should receive a special sickness grant so as to ensure that the income is made equal to what it would be if the wage-earner were working. What chance of recovery has any patient who is continually haunted by the knowledge that the family at home are bordering on starvation and may only be kept alive by getting into debt as far as possible?

There would appear to be four probable sources from which money might be granted to make up the deficiency in the family income. 1. From philanthropic agencies. These are quite inadequate as a rule, and many agencies exclude tuberculous patients from benefit owing to the chronicity of the disease. 2. From the Poor-law. While in many cases doubtless the Poor-law authorities deal generously with the sick poor, as a rule the tendency is not toward generosity. Again, there is still a healthy prejudice in the minds of most working men against accepting Poor-law relief, so that on the whole it is neither likely nor desirable that the income should be augmented from Poor-law sources. 3. From a special municipal fund. Unfortunately no special fund for this purpose is in existence, nor, in view of present economic conditions, is one likely to be created. Still, it appears desirable that there should be such a fund, as the money spent in half-curing a patient is so much money wasted if he has to leave the sanatorium owing to financial difficulties at home. 4. From the National Insurance funds. For insured persons—and these constitute the bulk of male patients—it would appear equitable that an extra money grant should be given from Insurance funds to meet their financial strain while undergoing treatment. It is a recognised fact that the insured person in the matter of tuberculosis is doubly taxed. He is taxed as an insured person for sanatorium benefit and he is taxed as a ratepayer to keep up the city sanatorium. Such an anomalous condition ought to cease and institutional treatment should be provided by the local authority alone. The funds then in possession of the Insurance Committee for tuberculosis could be made available for other purposes, one of which might be the augmenting of the family income while the wage-earner was undergoing treatment.

When the mother of a family suffers from tuberculosis problems arise which are at present wellnigh insoluble. Speaking generally, mothers do not seek advice until the disease is well marked and the prospect of cure very much lessened. If the mother has a young baby at home it is very seldom that she will consent to a prolonged separation from her child. When there are several young children it is often a difficult matter to make provision for them while the mother is in the sanatorium, and the knowledge that the children are not properly cared for causes her much anxiety. In Edinburgh an attempt is made to meet this difficulty through assistance granted by the Royal Victoria Hospital Trust. In some cases the children are sent to different relatives; in others they are boarded out in a country home; but it is felt that this is a

duty which might properly devolve upon the local authority. This might be done by the municipality itself providing a temporary home, or by entering into an agreement with some other voluntary body to provide one. Suitable arrangements would be made for the father to contribute towards the maintenance of the children.

The Infectious Class of Cases.

The second class of patients—namely, the infectious—presents many intricate administrative difficulties. For clearness of argument they may be divided into three classes: (1) Where there is a likelihood of cure; (2) where the disease is advancing and a fatal termination may be expected in a few months; and (3) where the disease is practically stationary and an indefinite period of infectious life, probably of many years' duration, may be looked for.

In those cases where a cure may be looked for, sanatorium treatment, if deemed necessary, should be enforced. The chief difficulties in this class have already been discussed. In the patients with advancing disease the bedfast stage soon comes. In the poorer homes where accommodation is scanty removal to the hospital is often asked for, and in Edinburgh is always provided. At other times a mild compulsion is applied and the patient removed. In many cases, however, the relatives insist on the patient being left at home to die. Such an attitude is quite understandable, although not desirable from an administrative point of view. The best that can be said is that the period of risk to the others in the family is of comparatively short duration. Such cases should be dealt with on their individual merits, and compulsory removal should be effected where the home conditions are bad.

The greatest difficulty is presented by the chronic consumptive who lives for years and yet is in an infectious condition all the time. There is no possibility of curing him, so prolonged institutional treatment is out of the question. Compulsory segregation for this class, assuming it could be carried out, would mean a prison with a barbed-wire fence all round to preclude possibility of escape. It would also mean that any individual suspecting that he had consumption would avoid all medical aid until dying.

If the chronic consumptive cannot be cured, can he be educated so as to diminish the risk to others? This depends on the patient and on the sanatorium where he undergoes a short course of education. Even with the best training the ultimate conduct of the average working-class patients leaves much to be desired. Many of them, to their credit be it said, do their utmost to carry out the principles taught. Unfortunately, some sanatoriums teach nothing.

What, then, can be done with these chronic cases? If capable of work they should be encouraged to do what they can if thereby they are not a danger to others. If, however, the other workers object to have a tuberculous individual working in the same room, what then? Here is an actual case. A high-class dressmaker contracts tuberculosis and the disease, in spite of treatment, is progressing. She is still capable of some amount of work, but the work-girls object to her presence. She cannot now turn to any other form of occupation, nor is it desirable that she should continue dressmaking. She is in receipt of 5*s.* per week as disablement benefit, but this is insufficient for her needs. Surely, it seems desirable that this individual in her last year or two of life should be shielded from the twin curses of illness and poverty. We cannot now prevent the illness, but it appears to me that some measures should be taken to alleviate the poverty. If for the safety of the community a patient be excluded from his usual work, then the community should provide other suitable work or compensate such patient. This appears the only logical outcome. The compensation in the case of insured persons should come from the National Insurance funds.

The protection of the other members of the family forms a serious problem. Compulsory segregation not being attainable, a voluntary segregation might be successful if the rules of the institution could be so relaxed that the patient might be permitted a few hours off every afternoon or every alternate afternoon to visit his family. This would lessen the risk to the family considerably, although it would not abolish it altogether. There is much to be said both for and against such partial segregation, but it appears to merit a trial.

In other instances a measure of protection might be given by removing the family to a larger and better situated house. Here the patient might have a room set apart for his sole use, and by frequent visits of the tuberculosis nurse a certain standard of ventilation and cleanliness could be insisted on. The municipality in such cases should provide the better house, and pay, or assist in payment of, removal expenses. The segregation in such cases would be incomplete, but the healthier environment would act in increasing the resistance to the disease through improved health.

The whole question of segregation bristles with difficulties, and there is a grave possibility that at present too much attention is given to the germ and too little to the conditions which assist its growth and spread. The suggestion of the municipality providing better accommodation should be seriously entertained, and in the end it would probably save much hospital expense.

Summing up in conclusion, the curable should be sent to a sanatorium and moral suasion used to persuade them to remain until cured. In order to enable this being done the family income should be supplemented where necessary. In the case of a mother being ill the municipality in some instances should be prepared to care for the children during her illness. In the case of patients with advanced and progressing disease some should be compulsorily segregated and others provided with a separate room. The most difficult cases are the chronic ambulant infectious patients. With them voluntary segregation might be tried, with some modification of the sanatorium or hospital routine. Larger and better housing might be provided, with closer supervision and greater cleanliness and ventilation. The local authority should provide the institutional treatment, and the Insurance Committee should dispense its funds as a special tuberculous disablement benefit. In a city like Edinburgh this would mean that a sum approximating £3000 per annum would be available for special grants in necessitous tuberculous cases.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM: ANNUAL CONGRESS.

(*Concluded from p. 771.*)

THE proceedings of the Congress on Thursday afternoon, May 3rd, took the form of a visit to St. Dunstan's, Regent's Park, where the various activities and methods of training in operation were inspected, under the direction of Sir Arthur Pearson, Bart.

Visit to St. Dunstan's and a Discussion on the Employment of the Blind.

Sir ARTHUR PEARSON said St. Dunstan's had set an entirely new pace in the blind world. It was very important to try to abolish from the minds of the afflicted men morbid thoughts on their own condition; it not only resulted in greater happiness for them, but enabled the men to make the best use of their faculties by concentrating on the work in hand with a view to earning their independence. Very great assistance in the training was derived from the employment of blind pupil-teachers, for they were able to bring to the work the standpoint of one similarly afflicted. Owing to the intense application involved in the training the actual work was not allowed to extend beyond two and a half hours in the morning and a like period in the afternoon. The men were taught not only how to work, but also how to play, and rowing on the lake, horse-riding, and other forms of recreation were freely indulged in. He had received very high praise of the work done by the skilled blind masseurs who were fully trained and certificated in the institution, and the shorthand and typewriting abilities of many were good enough to command salaries up to the usual standard. Men whose work had been of a special supervising and advisory nature had been able to resume this work in their former posts with credit. Sir Arthur Pearson concluded with some remarks on the highly developed sense of proximity among blinded people. He attributed this to three factors—echo, difference in air pressure, and difference in temperature, which became apparent to the alert senses remaining.

Mr. ARNOLD LAWSON said that before the war very few agencies attempted the systematic training of the blind in all its aspects: there was a good deal of overlapping and much inefficiency. The crowd of young blinded men who had now been thrown on their country raised the question of the training of the blind to one of national importance.

The brilliant initiative of Sir Arthur Pearson had as the basis of its success the centralisation of effort, so that St. Dunstan's had become a centre where all aspects of training—moral, social, and economic—were fostered and encouraged. Those who set out to train the blind must be themselves trained. Here the blind man was taught how to live as a blind man, to be encouraged and supported in his initial difficulties by the companionship and experiences of others similarly placed. There was no fixed limit of tuition; the blind man had come to be trained, and he was kept until that had been accomplished, so that he was turned out as an active and independent citizen. A very important corollary was the after-care department, which followed up and looked after the blinded man when he sought to occupy a place in the world. This was necessary because in a blind man's work mistakes crept in which, not having been seen, remained uncorrected, wrong work thus becoming a habit, and the quality of the work deteriorating. He also needed protection in the buying of materials and against the designs of unscrupulous persons. He advocated marriage for the blinded young man; to a peculiar degree he needed someone to give him sympathetic care and to keep him neat and tidy, but every care should be taken to safeguard him from being exploited by unsuitable women. Mr. Lawson believed that this organisation, brought into being by the war, would prove a blessing in the future to ordinary cases of blindness arising in civil life.

Mr. H. B. GRIMSDALE discussed the question from the standpoint of his experiences the Normal College for the Blind. He pointed out that the handicap of blindness was at its greatest in the case of the craftsman and much lessened in the professional man, whose brain was as keen and efficient as when he could see, and his memory more highly trained. Sir Arthur Pearson's memory, for instance, though always good, was now prodigious. He emphasised the point that no one employment was good for all blinded persons. Hence it was a mistake to concentrate on one kind. There would always be a certain number of civilians of middle age blinded at their work, but the really important matter was to see that every blind child had his chance. He proceeded to detail the work done at the Normal College and some of the characteristic results obtained.

The discussion was continued by Captain A. W. ORMOND, Captain CRUISE, and the PRESIDENT. Sir ARTHUR PEARSON replied.

Clinical Meetings and Discussions.

Friday morning was devoted to visits to witness operations at the Royal London Ophthalmic Hospital, the Royal Eye Hospital, Southwark, and the 2nd London General Hospital, Chelsea, and the afternoon was occupied by a clinical meeting at the Royal London Ophthalmic Hospital, at which a very large number of cases were exhibited and discussed.

On Friday evening the following papers were read and discussed:—

Mr. W. B. INGLIS POLLOCK: Two cases of Leber's Disease (Hereditary Optic Atrophy), with X ray examination of the sella turcica.—The same subjcet was fully discussed by Mr. J. HERBERT FISHER.

Mr. G. MACKAY: A case of Uveo-parotitis with Irido-cycloplegia.

Mr. C. WORTH: Remarks upon Advancement Operations.

Mr. A. LAWSON: A case of Detachment of the Retina at the Ora Serrata.

Mr. E. CLARKE: Ophthalmometry in Estimating the Refraction of the Eye.

Mr. L. PATON: Spasm of Accommodation.

Lieutenant-Colonel R. H. ELLIOT: Operation of "Couching" of Cataract as Performed in India: its History, its Technique, and its Exponents.[1]

Mr. J. H. PARSONS: The Apocritic Principle and Visual Sensations.

On Saturday morning a discussion was held on

Concussion Injuries to the Visual Apparatus.

Captain A. W. ORMOND, in opening the debate, confined his attention to the subdivision contusio bulbi, leaving to others the consideration of contusio cerebri. His paper was based upon cases he had met with at the 2nd London General Hospital and at St. Dunstan's. The dictionary defined concussion as a condition induced by more or less violent shaking of some particular organ whereby serious symptoms might be induced, to account for which no definite lesion could be detected. But owing to the enormous power of modern explosives, violent shaking or concussion might lead to very definite lesions. The paper dealt with cases in which there had been injuries the result of vibrations conveyed from a distance. Violence transmitted through the bones of the skull was able to reach the inner tunics of the eye. Blows on the sides of the orbit could be transmitted through the sclerotic and produce serious concussion of the retina or choroid. And the part of the eyeball unprotected by bone might be influenced by air vibrations, many cases of serious damage to the globe having been recorded as due to "windage," in which, so far as could be ascertained, no solid particles struck the face. Vibration could so affect the outer surface of the eyeball, without disintegrating the dense sclerotic, as to pass through it with sufficient force to rupture the less firmly knit choroid and retina. In some cases the globe had been, in this way, entirely disorganised. Concussion or contusion effects could be produced in four different ways: (1) By vibrations the result of metal or other particles traversing the orbits; (2) by vibrations the result of blows on the bones of the orbit and face transmitted to the interior of the eyes; (3) by vibrations transmitted to the deeper parts of the globe through the corneo-scleral tunic without rupture of the eyeball; (4) by vibrations the result of windage. Captain Ormond then proceeded to deal in detail with the various structures of the globe as they had been affected by concussion injuries, and gave a tabulated list of cases to illustrate his remarks. With regard to treatment, he insisted on the extreme usefulness of the hot coil—i.e., a pad of lint or a bandage through which a graduated electric current is passed. In assuaging the pain of a bruise of the eye this, in the author's opinion, has no equal. His belief was still strong that mechanical means were best for hastening the absorption of vitreous or retinal hæmorrhage. He had not hesitated to deal with complete traumatic cataracts as soon as the eye had recovered from the immediate effects of the traumatism, and in only one case had he had cause to regret doing so. That single exception was one in which a piece of wood was present in the ciliary body, and a septic irido-cyclitis developed, which resulted in a shrunken fluid eye. In dealing with wounds which involved the air cavities flanking the orbits, free drainage was necessary. Hot fomentations frequently applied formed the best dressing for wounds about the orbits, which were almost invariably septic.

Dr. S. A. KINNIER WILSON, in a paper dealing with injuries of central origin, said the whole question of commotio was still shrouded in considerable obscurity, looseness of conception being responsible for some clinical confusion. In some of these cases which had proved fatal the closest investigation had not revealed recognisable anatomical lesion. In most instances of severe blow on the head there were capillary hæmorrhages, minute lacerations of the cerebral substance, and consequent disintegration of myelin. With the blow there had been a sudden dispersion of cerebro-spinal fluid, which tended to escape too abruptly by the natural exits. Complete recovery might ensue, even after severe symptoms. The term "cerebral contusion" was more applicable to cases in which recognisable organic changes had occurred, as it excluded mere "functional" disturbance. Oppenheim holds that the basis of "shock" is cerebral commotio. Fickler believes that the conception of concussion of the spinal cord, of purely molecular origin, is not admissible. The experiments of Alan Newton showed that there was an organic basis for the transient disturbances of function seen in so-called "railway spine" and allied conditions. There might be a surprising amount of tissue change from a feeble impact. The tremendous speed of projectiles in warfare rendered ordinary pure commotio almost impossible. Hence cases of pure visual concussion in the war were very few; he excluded cases in which there had been a shell explosion in the near vicinity. The case which approached most nearly to pure commotio among those he had seen was that of a soldier, aged 19, who was hit on the back of the head by a shell fragment while cutting wood in a dug-out. He lost consciousness for three minutes, reviving when his mate moved his right arm, which had also been hit and was very painful. He felt very sick, and was quite blind in both eyes, remaining blind for 40 to 48 hours. On the third day he was able to see dimly with each eye. There was no dysmetropsia. The same afternoon a small piece of bone was removed from the orbit, and a little later another piece. The shadowy objects which he saw at first had no colour, while shutting his eyes did not always banish the image. These subjective phenomena disappeared after about a fortnight. Two months later, the pupillary reactions and the optic discs were normal, vision 6/60 in both eyes, Jaeger 14 in both. There was a concentric diminution of both fields for white and colours, and marked visual fatigue. A skiagram showed that the outer table was splintered, and the inner one cracked. This certainly was not a case of traumatic hysteria; moreover, except for the visual symptoms, there was no impairment of function of the nervous system discoverable. Dr. Wilson's conclusion was that visual impairment after generalised commotio cerebri was far more rare than was labyrinthine or other auditory impairment.

[1] THE LANCET, 1917, i., 325, 361.

The PRESIDENT (Mr. E. Treacher Collins) contributed to the discussion with remarks on sub-choroidal hæmorrhage from concussion, and its relation to (*a*) "commotio retinæ"; (*b*) "holes at the macula"; (*c*) pigmentation of the retina; and (*d*) pigmentary disturbance at the macula. Subchoroidal hæmorrhage was, he said, a condition with which ophthalmic surgeons were most familiar when it occurred after intra-ocular operations, such as extraction of cataract or iridectomy for glaucoma. Probably in these cases the choroidal vessels were sclerosed and brittle, when, owing to diminution of intra-ocular pressure, the blood rushed in and expanded them. The pressure of the suffused blood forced the choroid inwards and the contents of the globe forwards towards the wound, from which, in many cases, some of it escaped. Indirect rupture of the globe also produces subchoroidal hæmorrhage, as might occur in the intact eyeball after concussion. In the latter case the blood effused tended to accumulate as a flattened layer rather than as a prominence, probably because it met with resistance from the sclerotic externally. Subchoroidal hæmorrhage must be differentiated from intrachoroidal hæmorrhage. The former was probably, he thought, due to rupture of the larger vessels in the outer layer, and the latter to an effusion from the capillary and inner layer. An effusion of blood external to the choroid would not be visible as such ophthalmoscopically. The obstruction to the choroidal circulation produced by subchoroidal hæmorrhage was not necessarily permanent; the effusion of blood causing it must cease as soon as it was produced. Berlin described the clinical appearances of an eye affected with commotio retinæ as considerable diminution in the acuity of vision in the centre of the field and marked resistance of the sphincter papillæ to the influence of atropine, followed shortly afterwards by distinct haziness of the fundus and possibly small hæmorrhages. The changes were most marked around the yellow spot. The highest development was reached in 24 to 36 hours, and it disappeared in two to three days. Sight much improved at first and then remained stationary. Haab found that of 167 cases of concussion of the eyeball 82·6 per cent. showed no alteration in the fundus. Mr. Collins believed Berlin's observations to be correct. He thought it still remained to be proved whether concussion injuries of the eye might result in extra-ocular rupture of a ciliary artery, but there was definite evidence that they might produce subchoroidal hæmorrhage. Following severe contusion of the eye there might be pigmentary disturbances of the macula, causing permanent impairment of vision.

Captain CRUISE, Sir GEORGE BERRY, Mr. A. L. WHITEHEAD, Dr. GEO. MACKAY, Dr. T. HARRISON BUTLER, Mr. A. B. CRIDLAND, and Mr. P. C. BARDSLEY continued the discussion, and Captain ORMOND replied.

An interesting addendum to the Congress took the form of a museum of drawings, pathological specimens, and ophthalmoscopes, which was under the charge of Mr. W. H. MCMULLEN who read a paper on the History of the Development of the Ophthalmoscope.

THE CONTROL OF VENEREAL DISEASES.

Phenol Serum in Gonorrhœa.

Dr. F. Guillermo Cano, professor of genito-urinary diseases in the Medical School of San Salvador, C.A., states that as the result of two years' laboratory work he has produced a definite chemico-biological substance, known as methyl-phenol serum, and that he has proved its efficacy and safety in the treatment of more than 3000 private and hospital patients. The results were published in the Archives of the Rosales Hospital, San Salvador, in 1910 and in November, 1913. Four years of clinical experience with this method have enabled him to summarise as follows:—

1. The treatment of gonorrhœa by intravenous injections of this serum until the disease has reached its declining stages prevents complications. 2. Pain, discomfort, and all other subjective and objective symptoms usually disappear after the fourth or fifth injection, and definite clinical and bacteriological cures are effected in from 30 to 40 days. 3. Ten injections are usually sufficient when the infection is attacked at its onset. 4. Gonorrhœa, when complicated by primary or secondary syphilis, successfully responds to the treatment if additional antisyphilitic medication is employed. 5. Local complications, such as epididymitis, buboes, abscesses, &c., together with systemic manifestations such as toxæmia and the paragonococcal lesions, disappear more rapidly with this form of treatment than with any other, and surgical interference is rarely necessary. 6. By the use of intravenous and intraprostatic injections of the serum months, not years, are required to cure chronic residual prostatic gonorrhœa and its numerous recrudescences.

It is claimed that an intravenous injection of 10 c.c. of methyl-phenol serum or an intraprostatic injection of normal phenol serum is non-toxic. A paper on the above treatment by Dr. F. G. Cano, Dr. Terry M. Townsend, and Dr. Julius J. Valentine, of New York, was read before the American Urological Association at its annual meeting in Chicago, Illinois, on April 2nd–4th last by Dr. Townsend. Dr. Townsend and Dr. Valentine have administered between six and seven hundred intravenous injections of methyl-phenol serum and 67 intraprostatic injections of normal phenol serum in 73 selected private and hospital patients. It is from the latter series of infections covering a period of almost one year that they have made their clinical observations and deductions. Their conclusions are as follows:—

1. Methyl-phenol serum may be injected repeatedly intravenously in doses of 10 c.c. into adults at intervals of 48 hours without danger or detriment to life or health. 2. Its use has a tendency to prevent complications by killing or rendering inert the invading gonococcus at the site of residence. 3. For the same reason and because of the neutralisation of gonotoxins it shortens the course of the gonorrhœa and alters a vicious into a benign infection. 4. Its use causes general increased economic resistance, hence gonorrhœal sequelæ are rare. 5. Intraprostatic injections of normal phenol serum are harmless when correctly performed, frequently cause a rapid disappearance of gonococci from the prostatic secretion, and invariably shorten the time required to cure chronic gonorrhœal prostatitis. 6. The treatment of gonorrhœa by the application of Cano's theory of intravenous injections of methyl-phenol serum and intraprostatic injections of normal phenol serum is firmly based upon chemico-biological facts and accepted authoritative theories, and bears the same relation to gonorrhœa that intravenous injections of arsenical preparations bear to syphilis. 7. This is the first application of the immutable laws of chemico-biology to gonorrhœal infection, and forms the basis for a scientific and uniform treatment of gonorrhœa.

According to Dr. Cano, the rôle of either an intravenous injection of methyl-phenol serum or an intraprostatic injection of normal phenol serum is that of an antiseptic, and its effects are due to the action of phenol on the gonococcus and its toxins at the site of infection, locally, and within the body, systematically by means of the blood stream. It is to be sincerely hoped that further results, or a more widespread use of this mode of treatment, may substantiate the claims made for its efficacy by the authors of the paper.

A Syphilis Number of the "Indian Medical Gazette."

The *Indian Medical Gazette* for April, 1917, contains a special supplement of 34 pages, with four essays on Recent Advances in the Treatment of Syphilis, the result of a recent competition. Lieutenant-Colonel J. T. Calvert, I.M.S., principal of the Calcutta Medical College, and Lieutenant-Colonel W. D. Sutherland, I.M.S., imperial serologist, acted as judges, awarding the prize to Dr. Rajendra Kumar Sen, of the Dejvo Tea Company, Lakhimpore, North Assam. The other three essays published are by Lieutenant-Colonel E. E. Waters, I.M.S., Captain T. Crawford Boyd, I.M.S., and Saret Chandra Ghose, L.M.S. While not adding anything new to the subject of syphilology, the four papers form a summary of recent work which cannot fail to be of use for reference to other workers.

Enlightenment Campaign.

Mr. N. Bishop Harman has written a little book, entitled "Staying the Plague" (Methuen's Health Series. 1917. Pp. 120. Price 1*s.* net), in which he sets forth in clear language and with striking illustration the main facts of sex, of venereal disease, and of the means of preventing such disease. The book is intended to help in widening the awakening due to the report of the Royal Commission into an intelligent and progressive activity, and is, we think, well fitted to this end. The medical reader will find material usefully arranged for teaching purposes. Kipling's paraphrase, "The fathers have eaten of forbidden fruit and the children's teeth are notched," will be fresh to many.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Nursing Board for Ireland.

THE Nursing Board for Ireland, established by the Royal College of Surgeons in Ireland, has held its first meeting under the presidency of the President of the Royal College of Surgeons, Lieutenant-Colonel William Taylor, who has been elected chairman of the Board. The College has nominated four members of the Board—Lieutenant-Colonel W. Taylor, Lieutenant-Colonel Sir Arthur Chance, the Right Hon. Dr. Michael F. Cox, and Dr. T. P. C. Kirkpatrick, and with them are 22 nurses elected by representatives of the nursing profession. A committee was appointed to draft by-laws.

Tuberculosis in Co. Tyrone.

At a meeting of the Tyrone Insurance Committee held on May 12th Dr. E. C. Thompson, surgeon to the Omagh County Infirmary, criticised severely the treatment of tuberculosis patients in the county of Tyrone. He pointed out that though a large amount of money was being spent there was no report issued to give the public an opportunity of judging whether they were getting value for it. As an expert, expressing the opinion of experts, he could say they were practically getting no value, and that, he averred, was the opinion of nearly every doctor in the county. Criticising the constitution of the County Council Tuberculosis Committee, he said every expert in the county had been left out with the exception of their own official. He was not casting any reflection on their tuberculosis medical officer, but the whole system was wrong, and the only way to treat the disease was to get at the root of it. There should be better housing, inspection of school children, and an attempt made to stop the ravages of drink. There can be no doubt that in Ireland the means for dealing with tuberculosis are producing no results, as is clear from the fact that the mortality for tuberculous disease per 1000 in 1915 was 2·20, which is 0·13 above that for 1914, and 0·03 above the average rate for the period 1910-14. In England and Wales in 1915 the rate was 1·5. The statistics for 1916 are not yet published.

An Inquiry at Portrane Asylum.

The Inspectors in Lunacy recently held an inquiry into the circumstances surrounding the death of a patient in the Portrane Auxiliary to the Richmond Asylum. From the evidence given it was established that when one of the assistant medical officers was summoned in the middle of the night to attend the patient, he declared that he was off duty and referred the messenger to his colleague. The latter also said that he was off duty, and although the two medical men met and engaged in some controversy neither visited the patient, who died an hour later. The inspectors comment strongly on the refusal of both medical officers to attend in reply to an urgent message, and on their standing on their supposed rights. Their conduct was, the inspectors said, alien to the traditions of the medical profession. At the next meeting of the Richmond Asylum committee both officers were called on to resign.

May 22nd.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeon: E. Bayley.

ROYAL ARMY MEDICAL CORPS.

To be temporary Lieutenant-Colonels: E. H. Taylor and A. R. Parsons.

To be acting Lieutenant-Colonels while in command of a Casualty Clearing Station: Major A. M. MacLaughlin and Brevet-Lieut.-Col. A. H. Safford.

To be acting Lieutenant-Colonel whilst in command of a Stationary Hospital: Capt. (temp. Major) J. A. Manifold.

To be acting Lieutenant-Colonel while in command of a Field Ambulance: Capt. Francis W. M. Cunningham.

Major Raymond L. V. Foster and Temp. Capt. J. G. Johnston relinquish the acting rank of Lieutenant-Colonel on re-posting.

To be temporary Majors: Temp. Capts. C. S. Read, S. W. Woollett, and E. A. Chartres, and J. C. Briscoe, W. A. Winter, R. C. B. Maunsell, and K. E. L. G. Gunn.

To be temporary Captains: F. W. H. Hutchinson, L. A. Walker, F. Fraser, R. B. Taylor, Temp. Lieut. E. W. Honsinger (Canadian Army Dental Corps), E. C. Black, W C. Mayo, G. D. Laing, Lieut. D. H. Coats, W. Boxwell, C. E. Boyce, F. H. McC. Crawley, and E. J. M. Watson.

To be temporary Captains while employed at the Belfast Orthopædic Hospital: S. T. Irwin and C. G. Lowry.

To be temporary Lieutenants: E. J. Peill, P. C. Leslie, G. H. U. Corbett, W. R. Reeds, H. A. Richards, A. Fraser, J. H. Ashworth, B. V. Ward, D. M. Humby, J. Blakely, J. H. Clatworthy, J. H. Porter, A. Roemmele, R. W. Brown, J. J. S. Scrase, W. St. J. Cogan, H. C. Malleson, H. M. Thompson, J. Wells, H. Cox, J. B. Anderson, R. F. Lunn, W. R. Read, W. Kingdon, F. G. Power, C. Gordon, S. H. S. Taylor, H. F. Lumsden, J. W Miller, F. E. Larkins, M. Stewart, H. A. Edwards, F. H. Kitson, J. S. Crichton, F. Anderson, D. McDougall, F. R. L. Atkins, J. I. Greig, E. H. Smith, M. Macleod, G. Burnet, S. H. Robinson, R. Larkin, J. Campbell, A. H. G. MacKintosh, H. A. Evans, H. G. Arnott, L. L. Winterbotham, W. B. Griffin, W. Messer, J. Jenkins, R. Thorp, W. S. Alderson, T. S. Sharpley, F. M. Longson, J. S. Soulter, A. Chance, E. G. Stanley, C. G. McAdam, K. G. Colquhoun, J. S. E. Selby, G. C. McL. Barber, P. J. D. O'Malley, A. C. Reid, C. H. Wilson, J. T. Daly, J. E. MacFarlane, R. W. H. Hillis, H. N. Marrett, W. H. Pallett, P. A. Wedgwood, P. M. Reid, W. Fleming, D. Higgins, W. D. Ross, P. de S. Smith, A. J. M. Paget, W. A. Watson, S. C. Jellicoe, S. B. Depree, W. H. Roache, P. A. Mitchell, O. Marshall, H. MacKenzie, C. Alison, G. Maxted, P. R. Chevreau, T. Craig, K. D. Marriner, E. Lewis, R. W. Eddie, R. G. Williams, F. I. Dawson, R. H. G. Oulton, A. H. Southam, A. H. Holmes, J. W. Johnstone, E. E. Willis, B. J. O'Donnell, J. B. O'Reilly, G. Birch, R. H. S. Torney, F. G. Smyth, R. W. Reid, A. S. Rose, W. Martin, F. Brickwell, A. C. Campbell, A. G. Wilson, H. Leach, F. C. Trapnell, W. Waugh, C. Elliott, W. J. Lord, T. C. Innes, W. L. Stuart, N. Beattie, D. Mackinnon, J. Buchanan, W. T. Lydall, J. S. W. Nuttall, W. Chapman, A. P. Nicolle, E. A. Bullmore, H. R. Crisp, E. G. von B. Bergh, R. Buchanan, W. H. Woodyer, H. J. Henderson, A. C. Wilson, H. R. Carter, H. G. Barrie, R. S. Topham, T. W. Lonsdale, L. C. W. Cane, F. M. Bishop, A. J. Turner, R. C. Muir, J. W. Power, F. MacK. Matheson, H. D. Ledward, W. St. C. McClure, W. A. Sharpin, O. W. Jones, H. R. Elliott, G. P. Humphry, S. M. MacKenzie, A. N. Hodges, R. A. McCrea, E. L. Jones, R. F. Ballantyne, F. R. Carroll, G. McQ. Brunton, D. M. Cox, M. Horan, J. Owen, A. B. Scott, W. Smith, S. S. Brook, E. A. Edington, C. E. A. Goodard.

Officers relinquishing their commissions: Temp. Major R. E. Crosse, Temp. Capts. (on account of ill-health) T. Mulcahy and W. V. T. Styles, Temp. Lieut. T. A. MacKenzie.

SPECIAL RESERVE OF OFFICERS.

To be Lieutenants: C. V. Pearson, P. B. Pinkerton, and A. J. B. Griffin (from Manchester University Contingent O.T.C.); J. D. Johnson (from Durham University Contingent O.T.C.); J. Allison, J. B. Hanna, W. McElroy, R. B. Smith, J. Aitken, J. L. Hill, J. M. Martin, J. H. Neill, F. J. Jack, and H. Patlansky (from Edinburgh University Contingent O.T.C.); F. W. Hebblethwaite, H. F. Hollis, C. L. Somerville, J. W. W. Baillie, A. McA. Blackwood, J. MacD. Clark, A. Dick, J. R. R. Holms, W. H. Kerr, J. Liddell, F. C. Logan, K. McAlpine, A. D. C. McGowan, D. W. M. MacKenzie, W. D. Miller, W. H. Palmer, J. W. Patterson, H. B. Sergeant, A. W. Smith, and R. Wiggins (from Glasgow University Contingent O.T.C.); R. R. Garden, A. C. Irvine, W. W. Nicol, and R. Thom (from Aberdeen University Contingent O.T.C.); J. H. Davison (from Queen's University, Belfast, Contingent O.T.C.); H. W. Lewis, J. E. Carpenter, E. B. Andreae, A. G. E. Wilcox, H. J. C. Churchill, E. D. Spackman, A. O. Bolton, and W. J. FitzG. Powell (from University of London Contingent O.T.C.); R. Nixon, E. Bramley, J. M. Morrison, L. C. Rudd, D. Lennox, E. S. Stubbs, C. Shearer, T. G. Roche, and W. C. MacKinnon (from Unattached List, T.F.), and H. W. Featherstone.

Lieutenant (on probation) F. M. Rorie is confirmed in his rank.

TERRITORIAL FORCE.

Lieut.-Col. J. F. Dobson, from temporary retired pay list, to be Lieutenant-Colonel, with precedence as from October, 1914.

Lieutenants to be Captains: S. F. H. Everill, G. Thomson, A. G. Banks, and A. E. Raine.

Major J. R. Williams relinquishes his commission on account of ill-health.

Capt. (temp. Major) J. Innes relinquishes his commission on account of ill-health, and is granted the honorary rank of Major.

URBAN VITAL STATISTICS.

(Week ended May 19th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 14 4, against rates declining from 18·5 to 15·3 per 1000 in the five preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 13·9, or 1·5 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 5·9 in Smethwick, 6·3 in Acton, and 7·1 in Hornsey, to 26·2 in Carlisle, 26·3 in Great Yarmouth, and 26·6 in Middlesbrough. The principal epidemic diseases caused 377 deaths, which corresponded to an annual rate of 1·2 per 1000, and included 204 from measles, 61 from whooping-cough, 59 from infantile diarrhœa, 35 from diphtheria, 10 from enteric fever, and 8 from scarlet fever. The deaths from measles were 48 fewer than the number in the previous week, and caused the highest annual death-rates of 2·5 in Bolton, 3·1 in West Bromwich, 3·3 in Rotherham, 3·8 in South Shields, and 4·1 in Middlesbrough. The 673 cases of scarlet fever and 1160 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 34 and 19 below the numbers remaining at the end of the previous week. Of the 4669 deaths from all causes in the 96 towns, 155 resulted from violence. The causes of 38 deaths were uncertified, of which 6 were registered in Birmingham, 5 each in Liverpool and Manchester, and 4 each in St. Helens and Carlisle, but only 1 in London.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual death-rate was equal to 17·0, against rates declining from 18·4 to 15·9 per 1000 in the three preceding weeks. The 393 deaths in Glasgow corresponded to an annual rate of 18·4 per 1000, and included 42 from measles, 33 from whooping-cough, 4 each from diphtheria and

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING APRIL, 1917.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1916.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.									
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.
LONDON...	4,237,387	—	348	559	—	30	1	17	203	46	1	1205	3·7	—	337	10	49	44	9	61	510	1·6	5902	18·2
West Districts:																								
Paddington	130,668	—	6	13	—	1	—	1	3	—	—	24	2·4	—	50	—	—	2	—	2	54	5·4	213	21·3
Kensington	152,144	—	6	14	—	3	—	—	4	1	—	28	2·4	—	22	—	1	—	—	2	25	2·1	244	20·9
Hammersmith ...	117,965	—	8	14	—	1	—	—	6	2	—	31	3·4	—	3	—	1	—	1	3	8	0·9	137	15·1
Fulham	149,428	—	5	18	—	—	—	1	5	5	—	34	3·0	—	15	—	4	2	—	4	25	2·2	192	16·7
Chelsea	57,298	—	1	2	—	—	—	—	2	1	—	6	1·4	—	1	—	—	—	—	—	1	0·2	83	18·9
City of Westminster	132,853	—	5	10	—	—	—	2	3	1	—	21	2·1	—	2	1	1	—	—	1	5	0·5	184	18·1
North Districts:																								
St. Marylebone ...	98,573	—	8	16	—	—	—	—	5	—	—	29	3·8	—	27	—	2	—	—	1	30	4·0	163	21·6
Hampstead	81,470	—	5	14	—	1	—	—	—	1	—	21	3·4	—	2	—	—	—	—	1	3	0·5	96	15·4
St. Pancras	196,812	—	12	36	—	2	—	1	6	5	—	62	4·1	—	15	—	6	1	1	7	30	2·0	336	22·3
Islington	309,359	—	23	46	—	2	—	1	20	7	—	104	4·4	—	18	1	1	3	—	3	26	1·1	437	18·4
Stoke Newington...	49,776	—	4	13	—	1	—	—	4	1	—	23	6·0	—	1	—	2	2	—	—	5	1·3	60	15·7
Hackney	209,636	—	18	23	—	1	—	—	10	1	—	53	3·3	—	—	—	4	—	—	1	5	0·3	263	16·4
Central Districts:																								
Holborn	38,161	—	1	6	—	—	—	—	1	—	—	8	2·7	—	6	—	1	—	—	3	10	3·4	62	21·2
Finsbury	74,230	—	12	12	—	1	—	1	1	—	—	27	4·7	—	7	—	1	—	—	1	9	1·6	117	20·5
City of London ...	20,113	—	—	2	—	—	—	—	—	—	—	2	1·3	—	—	—	—	1	—	—	1	0·6	20	13·0
East Districts:																								
Shoreditch	99,932	—	16	16	—	2	—	—	17	3	—	54	7·0	—	1	1	1	—	1	—	4	0·5	166	21·7
Bethnal Green ...	115,552	—	12	14	—	—	—	1	8	1	—	36	4·1	—	7	1	—	—	—	3	11	1·2	157	17·7
Stepney	258,395	—	21	49	—	—	—	—	15	2	—	87	4·4	—	8	—	6	1	—	7	22	1·1	312	15·7
Poplar	155,095	—	8	27	—	3	—	2	14	1	—	55	4·6	—	20	1	1	1	—	8	31	2·6	232	19·5
South Districts:																								
Southwark	177,166	—	25	22	—	—	—	—	16	—	—	63	4·6	—	9	2	3	4	2	—	20	1·5	287	21·1
Bermondsey	113,661	—	28	31	—	—	—	1	9	—	—	69	7·9	—	11	—	1	—	—	—	12	1·4	172	19·7
Lambeth	283,729	—	20	49	—	—	—	—	11	1	—	81	3·7	—	20	1	—	9	1	4	35	1·6	410	18·8
Battersea	159,402	—	15	5	—	—	—	—	3	4	—	27	2·2	—	11	1	—	1	—	—	13	1·1	213	17·4
Wandsworth	310,858	—	30	23	—	—	1	4	4	2	—	64	2·7	—	33	1	3	7	—	4	48	2·0	381	16·0
Camberwell	249,749	—	21	33	—	8	—	1	11	2	—	76	4·0	—	24	—	6	8	1	3	42	2·2	352	18·4
Deptford	107,696	—	8	16	—	—	—	—	8	—	—	32	3·9	—	4	—	—	—	—	2	6	0·7	142	17·2
Greenwich	94,452	—	2	14	—	1	—	—	5	2	—	24	3·3	—	8	—	2	1	1	—	12	1·7	135	18·6
Lewisham	162,901	—	15	9	—	1	—	—	6	1	1	33	2·6	—	4	—	2	1	1	—	8	0·6	182	14·6
Woolwich...	130,313	—	8	11	—	1	—	1	6	2	—	29	2·9	—	8	—	—	—	—	1	9	0·9	154	15·4
Port of London ...	—	—	—	1	—	1	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

infantile diarrhœa, and 2 from scarlet fever. The 107 deaths in Edinburgh were equal to an annual rate of 16·8 per 1000, and included 15 from measles, 6 from whooping-cough, and 1 from diphtheria.

Irish Towns.—The 141 deaths recorded in Dublin were equal to a rate of 18·4, or 1·9 per 1000 below that recorded in the previous week, and included 3 each from whooping-cough and infantile diarrhœa, and 1 each from measles, scarlet fever, and diphtheria. The 141 deaths in Belfast corresponded to an annual rate of 18·7 per 1000, and included 2 from enteric fever.

VITAL STATISTICS OF LONDON DURING APRIL, 1917.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 3·7 per 1000 of the population, estimated at 4,237,387 persons in the middle of the year; in the three preceding months the rates were 4·0, 4·2, and 4·4 per 1000 respectively. The lowest rates last month were recorded in Paddington, Kensington, Chelsea, the City of Westminster, the City of London, and Battersea; and the highest rates in Stoke Newington, Finsbury, Shoreditch, Poplar, Southwark, and Bermondsey. The prevalence of scarlet fever showed a considerable decline last month; among the several metropolitan boroughs this disease was proportionally most prevalent in Finsbury, Shoreditch, Bethnal Green, Southwark, and Bermondsey. The Metropolitan Asylums Hospitals contained 712 scarlet fever patients at the end of last month, against 800, 811, and 785 at the end of the three preceding months; the weekly admissions averaged 93, against 111 and 102 in the two preceding months. Diphtheria also was less prevalent than it had been in other recent months; the greatest proportional prevalence of this disease last month was recorded in St. Marylebone, Hampstead, St. Pancras, Stoke Newington, Holborn, Finsbury, Shoreditch, Stepney, Poplar, Bermondsey, and Lambeth. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1420, 1453, and 1367 at the end of the three preceding months, had further declined to 1206 at the end of last month; the weekly admissions averaged 142, against 168, 165, and 161 in the three preceding months. Enteric fever was rather less prevalent than in either of the two preceding months; the 30 cases notified during the month included 8 in Camberwell, 3 in Kensington, 3 in Poplar, and 2 each in St. Pancras, Islington, and Shoreditch. There were 25 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 29 at the end of each of the two preceding months; the weekly admissions averaged 4, against 4 and 6 in the two preceding months. Erysipelas was proportionally most prevalent in Stoke Newington, Shoreditch, Poplar, Southwark, and Bermondsey. The 46 cases of cerebro-spinal meningitis included 7 in Islington, 5 in Fulham, 5 in St. Pancras, and 4 in Battersea; and a case of poliomyelitis was notified in Lewisham. The 17 cases of puerperal fever notified during the month included 4 in Wandsworth, 2 in the City of Westminster, and 2 in Poplar.

The mortality statistics relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ending April 28th the deaths of 5902 London residents were registered, equal to an annual rate of 18·2 per 1000; in the three preceding months the rates were 18·4, 21·3, and 18·3 per 1000 respectively. The lowest rates last month were 13·0 in the City of London, 14·6 in Lewisham, 15·1 in Hammersmith, 15·4 in Hampstead and in Woolwich, and 15·7 in Stoke Newington and in Stepney; the highest rates were 20·9 in Kensington, 21·1 in Southwark, 21·2 in Holborn, 21·3 in Paddington, 21·6 in St. Marylebone, 21·7 in Shoreditch, and 22·3 in St. Pancras. The 5902 deaths from all causes included 510 which were referred to the principal infectious diseases; of these, 337 resulted from measles, 10 from scarlet fever, 49 from diphtheria, 44 from whooping-cough, 9 from enteric fever, and 61 from diarrhœa and enteritis among children under 2 years of age. The lowest death-rates from these diseases were recorded last month in Chelsea, the City of Westminster, Hampstead, Hackney, and Shoreditch; and the highest rates in Paddington, Fulham, St. Marylebone, Holborn, Poplar, and Camberwell. The 337 deaths from measles were 130 in excess of the average number in the corresponding period of the five preceding years; this disease was proportionally most fatal last month in Paddington, Kensington, Fulham, St. Marylebone, Holborn, Finsbury, Poplar, Bermondsey, Wandsworth, and Camberwell. The 10 deaths from scarlet fever were only one-half of the corrected average number, and included 2 in Southwark. The 49 deaths from diphtheria were 8 in excess of the average, and included 6 in St. Pancras, 6 in Camberwell, 4 in Fulham, 4 in Hackney, 3 in Southwark, and 3 in Wandsworth. The 44 fatal cases of whooping-cough were 85 below the corrected average number, and included 9 in Lambeth, 8 in Camberwell, 7 in Wandsworth, 4 in Southwark, and 3 in Islington. The 9 fatal cases of enteric fever were 4 in excess of the corrected average, and included 2 in Southwark. The 61 deaths from diarrhœa and enteritis among children under 2 years of age showed a decline of 2 from the average number; the greatest proportional mortality from this cause was recorded in Hammersmith, Fulham, St. Pancras, Holborn, Stepney, and Poplar. In conclusion, it may be stated that the aggregate mortality in London last month from these principal infectious diseases was 9·7 per cent. above the average.

THE LATE SIR HUGH LANE'S MAGNIFICENT RED CROSS GIFT.—It will be remembered that the late Sir Hugh Lane, who was drowned in the sinking of the *Lusitania*, bid £10,000 at the first Red Cross sale in 1915 for a portrait to be painted by Mr. Sargeant. The executors of Sir Hugh Lane have now forwarded a cheque for the amount stated, but the sitter for the painting has not been nominated.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Accidentally Killed.

Capt. J. F. St. J. Annesley, R.A.M.C., was educated at Queen's College, Belfast, and qualified in 1888. He was in practice in Ireland before joining the R.A.M.C., and met his death through an accident to an aeroplane in which he was endeavouring to experience the effects of flying on the nerves.

Died of Wounds.

Capt. P. H. Burton, R.A.M.C., attached London Regt., was a student at the London Hospital and qualified in 1914.

Wounded.

Capt. C. A. R. Gatley, R.A.M.C., attached the Buffs.
Capt. D. J. S. Stephen, M.C., R.A.M.C.
Capt. R. B. Wallace, R.A.M.C., attached Leicester Regt.
Capt. H. G. Willis, R.A.M.C.
Capt. F. Harris, R.A.M.C.
Capt. A. C. Armstrong, Canadian A.M.C.
Capt. J. L. Stewart, M.C., R.A.M.C., attd. Gordon Highlanders.
Lieut. L. G. Fernie, R.A.M.C.
Capt. J. M. MacDonald, R.A.M.C.
Capt. T. C. Clarke, R.A.M.C.
Major J. W. Leitch, R.A.M.C.
Capt. J. M. Stalker, R.A.M.C., attached Royal Warw. Regt.
Capt. H. S. Sugars, R.A.M.C., attached West Yorks Regt.
Capt. R. A. S. Sunderland, R.A.M.C.
Capt. J. G. Brown, R.A.M.C., attached Royal Irish Fusiliers.
Capt. A. O. P. Reynolds, M.C., R.A.M.C., attached Devon R.
Capt. J. H. Brown, Australian A.M.C.

Missing.

Surgeon A. M. Russell, R.N.

Erratum.—Capt. J. Ewing, R.A.M.C., of Leeds, now temporarily stationed at Norwich, writes to say that he is not the same Capt. J. Ewing as was reported "Died of wounds" in THE LANCET of May 19th, 1917, p. 776. He reports that he is "as fit as the proverbial fiddle"—a condition upon which we congratulate the gallant member of our profession.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Capt. C. A. R. Gatley, R.A.M.C., attached the Buffs, son of Dr. H. R. Gatley, temporarily Assistant Medical Officer at Maidstone Asylum.
Capt. V. O. Todd, Royal Lancaster Regiment, second son of Col. O. Todd, A.M.S.
Capt. B. R. Poole, Canadian Army Veterinary Corps, youngest son of Surg.-Major G. K. Poole, of Upper Norwood.
Second Lieut. H. E. K. Eccles, Royal Flying Corps, eldest son of Dr. E. T. Eccles, of Hove, Sussex.
Lieut. P. H. G. Pye-Smith, Liverpool Regiment, only child of the late Dr. P. H. Pye-Smith, F.R.S.
Capt. A. H. Ardagh, Canadian Infantry, only son of Dr. A. P. Ardagh of Orillia, Ontario, Canada.
Second Lieut. M. W. A. Sandoe, Devonshire Regiment, eldest son of Dr. J. W. Sandoe of Broadclyst, Devon.

FOREIGN DECORATIONS.

Russian.

Order of St. George (4th Class).—Capt. J. A. Sinton, V.C., I.M.S.
Order of St. Anne (2nd Class, with Swords).—Lt.-Col. and Brev.-Col. J. M. Sloan, D.S.O., R.A.M.C.
Order of St. Stanislas (2nd Class, with Swords).—Lt.-Col. and Brev.-Col. M. H. G. Fell, R.A.M.C.

French.

Légion d'Honneur.—Croix de Chevalier: Maj. W. H. Tucker, I.M.S. *Croix de Guerre:* Capt. J. Angus, R.A.M.C., Lowland Field Amb.; Capt. O. Teichmann, R.A.M.C., attd. Worc. Yeo.; Maj. M. F. White, I.M.S.

THE UNITED STATES AND MEDICAL ORGANISATION FOR THE WAR.

Arrival in England of American Medical Contingents.—A contingent of medical men and nurses, ranking as a regular unit of the American Army has arrived in England on its way to France. The surgeons and nurses were received by the King last Wednesday, who welcomed them in the following speech :—

It is with the utmost pleasure and satisfaction that the Queen and I welcome you here to-day. We greet you as the first detachment of the American Army which has landed on our shores since your great Republic resolved to join in the world struggle for the ideals of civilisation. We deeply appreciate this prompt and generous response to our needs. It is characteristic of the humanity and chivalry which have ever been evinced by the American nation that the first assistance rendered to the Allies is in connexion with the profession of healing and the work of mercy.

The unit, which has a personnel of between two and three hundred, has been organised by, and is under the direction of, Professor G. W. Crile, the leader being Major Harry L. Gilchrist. In addition to the professional staff of 20 doctors and surgeons there are 65 nurses and three companies of orderlies. Harvard University has supplied 90 per cent. of the personnel, the remainder having been recruited from a number of other universities.

A second American medical contingent has now arrived in this country. It consists of 26 doctors, 60 nurses, and 250 orderlies.

Recent numbers of the *Journal of the American Medical Association* give an illuminating account of the administration of the Medical Department of the United States Army. The department is divided into the Medical Corps, Medical Reserve Corps, Nurse Corps, Dental Corps, Veterinary Corps, and the enlisted men of the Hospital Corps. After June 1st there will be in addition a Medical Officers Reserve Corps. The Medical Corps, which consists of commissioned officers, numbered 443 in June last, 150 additional officers having been placed on the roll since. The Defence Act of 1916 made provision for an additional 1000. In round numbers, each division of 20,000 men requires 100 medical officers for service with the division, in addition to those attached to hospitals in the rear. The Medical Reserve Corps is designed to furnish temporary medical officers for service with the Army in time of war, the numbers in June last being 1767 on the inactive list and 146 on the active list—i.e., men making good the shortage of officers in the regular corps, including those who took part in the recent concentration on the Mexican border. Previous to the formation of a reserve corps, contract surgeons were employed; but this plan was discarded as unsatisfactory to the Government as well as to the officers themselves. The Dental Corps, organised in 1911, consisted in June last of 40 regular dental surgeons and 35 acting dental surgeons. In the Spanish-American war a large number of volunteer nurses were employed; but the experience was not wholly satisfactory, and a Nurse Corps was organised in 1901, consisting of a superintendent, chief nurses, nurses, and reserve nurses and numbering at present 150 on the active list. The enrolled nurses of the American National Red Cross Nursing Service constitute the reserve of the Army Nurses' Corps. What are called the Sanitary Troops are employed for the care of the wounded and their transport to dressing stations, field and other hospitals. Between 5000 and 6000 men belong to the corps.

The Duties of Military Medical Officers.—The medical officers of the Army have duties similar to those of civilian life, opportunity being allowed for development in special branches of medicine or surgery. As a sanitary officer the medical man acts in an advisory capacity, reporting to his commanding officer, who has himself been instructed in sanitary matters and is in a position to appreciate the value of recommendations made to him. Examination of recruits is also part of the duties of the medical department, it being recognised that "it is of much more importance to obtain a small number of men physically effective than a large number of men liable to spend time in hospital and receive a pension on their discharge from the service." The medical officers deliver lectures to commissioned officers on personal and camp hygiene, while the men are instructed in personal hygiene and on the moral and physical aspects of venereal disease. Medical officers of the rank of major receive instruction in sanitary tactics. In time of war each divisional commander of 20,000 men has on his staff a medical officer of the rank of lieutenant-colonel, who is divisional surgeon with complete control of the medical department, and a sanitary inspector of corresponding rank under him. A new departure is the appointment of a divisional sanitary inspector who may be authorised by the divisional commander to remedy sanitary defects without reference to higher authority and without the delay "incident to the so-called 'red-tape' of the service."

OBITUARY OF THE WAR.

TOM WELSH, M.B., CH.B. EDIN.,

MILITARY CROSS;
CAPTAIN, SOUTH AFRICAN MEDICAL CORPS.

Captain T. Welsh, who was killed in action on April 13th, was younger son of the late James Welsh, of Edinburgh, and was educated at Merchiston School and Edinburgh University. Graduating in 1910, he filled resident medical and surgical posts at the Royal Infirmary, Edinburgh, and the Ramsgate General Hospital, afterwards going to South Africa as assistant medical officer to the Knight Central Mines at Johannesburg. He volunteered for service in the campaign against German South-West Africa, and in November, 1914, he accepted a commission as captain in the 1st South African Field Ambulance, being sent to Egypt for four months. Returning to France in April, 1916, he was mentioned in despatches after the fight at Delville Wood, and was awarded the Military Cross for conspicuous bravery at the Somme. "He displayed great courage and determination in organising and leading stretcher-parties under very heavy fire."

A medical friend writes of Captain Welsh: "Self-sacrifice and duty were the watchwords of his life, and in all he thought and did he was unselfish; he was always a joyous happy boy, simply because his honest and upright mind was far removed from evil. His life was sacrificed in an attempt to succour wounded men from a village which was being systematically shelled to the ground by the enemy. Tom Welsh leaves behind him keen regrets in the hearts of his friends."

JAMES RAE, M.A., M.D. ABERD.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant Rae, who was reported missing, believed drowned, on April 15th, on his way to Egypt on the troopship *Arcadian*, was second son of William Rae, advocate, of Aberdeen. He was educated at Aberdeen University and University College, London, taking his M.A. Aberd. in 1904 and qualifying in medicine in 1909. Two years later he took his doctorate with commendation, presenting a thesis on the Deaths of the Kings of England which afterwards appeared in book form, affording entertaining reading and containing an excellent bibliography. After holding resident appointments at the Children's Park Hospital, Hither Green, and the Selly Oak Infirmary, Birmingham, he joined the Royal Army Medical Corps and was appointed registrar to the Connaught Hospital, Aldershot. Whilst there he contributed to our columns an analysis of the Duration of Treatment in 1500 Cases, showing that return to duty occurred after an average of 28 days' treatment and at an average cost of £4 per man. Before sailing for Egypt he had been for a year resident surgeon at the 1st Birmingham War Hospital. Lieutenant Rae married in 1915 Alison B. Wells, youngest daughter of Thomas Wells, late of Edgbaston, Birmingham.

JOHN HENRY EDWARD AUSTIN, L.R.C.P. EDIN.,

COLONEL, ARMY MEDICAL SERVICE.

Colonel J. H. E. Austin, whose death took place in a military hospital in London on April 26th, was son of the late Rev. Edward Austin, of Rendlesham, Suffolk. He received his medical education at St. George's Hospital, London, qualifying in 1887, and joining the Royal Army Medical Corps four years later. He was specially promoted major for active service in the field in 1900, becoming lieutenant-colonel in 1912, and finally, in 1915, Colonel in the Army Medical Service.

In his earlier years he was stationed at Woolwich and was from 1893–96 in India, where he served at Belgaum, and afterwards at Mandalay and other places in Burma. In July, 1898, he was in Egypt with the Nile Expedition, receiving the British and Egyptian medals. He accompanied the 2nd Grenadier Guards to South Africa in 1900, serving with them during the greater part of the South African War, and was mentioned in despatches, receiving the Queen's medal with three clasps and the King's medal with two clasps. From 1902–6 he was at Singapore. In 1910 he was posted to the London District for recruiting duties, a subject in which he took considerable interest, shown by his contributions to the *Royal Army Medical Corps Journal* on the subject. He held the appointment of Medical Inspector of Recruits in Scotland until he proceeded to France with the Expeditionary Force in August, 1914. He subsequently went to Egypt in charge of a general hospital, and was invalided home from that country in September, 1915, his death occurring after an illness of several months' duration. Colonel Austin's death will be deeply regretted by a large circle of brother officers and friends.

JAMES ALFRED GREGORY, M.R.C.S. ENG.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant J. A. Gregory, who died of wounds received in France on April 13th, at the age of 26, was only son of Mr. R. Gregory, of Standish, Lancs. He was educated at the Manchester Grammar School, and studied medicine at Manchester University, qualifying in 1914, when he became house surgeon to the Evelina Hospital for Children. In June, 1916, he obtained a commission in the R.A.M.C., going out to France in the following November. He was wounded by a shell as he was taking part in an advance with the regiment to which he was attached, only surviving his injuries for a few hours. His reputation with his superior officers was that of a man always cheery and thorough in his work, even under the most trying conditions. Lieutenant Gregory was recently married to Mollie Waddington, formerly of Wigan, Lancs.

Correspondence.

"Audi alteram partem."

THE LUMLEIAN LECTURES AND MEDICAL RESEARCH.

To the Editor of THE LANCET.

SIR,—The articles and correspondence dealing with the Lumleian Lectures and Soldier's Heart that have recently appeared in THE LANCET have interested me, not only on account of the subjects themselves but because they throw a light upon a much wider aspect of medical science. True science is always progressive, and medical science fortunately can show progress, though at times it may be timorous and halting. At uncertain periods new ideas arise, or perhaps it would be better to say modifications of old ideas, for it is often difficult to trace the origin of any new idea. One man may get an idea from another and apply it in a different manner, and it may have a more fruitful result in its newer application. So when I speak of newer conceptions I mean it with this limitation.

I wish to show how the newer conception of investigation in clinical medicine differs from the conception of the past. The two different conceptions are excellently illustrated by the recent contributions to THE LANCET. We have, on the one hand, the results of the newer methods given in some detail, and we have representatives of the older school criticising them. We see in this little arena the characteristics of the warfare between progress and reaction carried on as it is in all the ages and in every sphere of human thought. The reactionary calling attention to the wisdom of the past, angry and indignant, but unable to comprehend the significance of the change that has come over the scene. The time will come when what I refer to now as the new conception will in its turn be replaced by other views.

Though the two opposing views have a bearing on the whole field of clinical medicine, the particular field of cardiology serves to illustrate the differences in a manner easily demonstrated. Clinical medicine up till now has dealt mainly with the later stages of disease, seeking for physical signs of disease, and the changes in the tissues after the disease has damaged the organism. This, of course, was a necessary stage in the advance in medicine, and it has given us facts sound and solid which we can use as steps to further knowledge. But having gone so far there has come a period when the field is nearly exhausted, and the necessity arises for a new conception if progress is to continue. At this stage some wish to progress one way and some another, and a good deal of confusion arises. Many eminent clinicians have looked around and have stated that no progress can be made until new instrumental methods are discovered and they look to the laboratory workers for assistance. If we look at recent books on diagnosis we shall find practically no advance in the last 30 or 40 years save for some new laboratory methods.

There has, however, gradually taken shape a conception of research in clinical medicine which can show a distinct advance, and though aided by instrumental methods, yet the more important observations have been discovered without accessory aids. This advance has been due to a fuller appreciation of the importance of symptoms and has necessitated the more accurate investigation into the sensations of the patient, and into the mechanism by which sensations and objective signs are produced, and the effect the cause of the symptoms has upon the health of the patient. This has required the patient observation of individual cases for long periods in order to note the progress of the disease and the careful recognition of all associated signs and symptoms.

Many people reading of the results of these methods will scoff and say that there is nothing new in them, that they had been pursued for years. If, however, we appreciate the mental attitude of your correspondents towards the recent researches in cardiology, the difference in the points of view will be realised.

We have Dr. F. J. Smith criticising—*more suo*—the Lumleian lecturer, as he criticised me some years ago on the supposition that I did not know that Sir A. Clark had taught that murmurs may have no significance. I was perfectly aware of Clark's views. I remember reading his address at the Brighton meeting of the British Medical Association in 1886 when he set them forth. They were to this effect: A great many people's hearts showed murmurs in whom heart failure, as he conceived it, did not arise. Now the fact that murmurs may be of little or no significance has long been recognised, but what Sir A. Clark failed to do, and what most other writers failed to do, was *how to assess the value of a murmur and to differentiate the murmurs that are of significance from murmurs that are of no significance*. There is a belief held by many that this differentiation has been achieved. Thus in his letter to THE LANCET Dr. A. Morison states that negligible cardiac bruits are usually easily diagnosed and have frequently been fully appreciated. Would he tell us where? He is a voluminous writer on cardiac matters. Will he point out a single instance where he has given with clearness and precision a description of how murmurs can be differentiated to show those that are innocent and negligible from those that imply danger? Would he also tell us where in his own writings, or in the writings of others, the principles for assessing the value of murmurs are indicated? His remarks, so far as I have read them, are of that oracular type from which any conclusion can be drawn, and full of that vague warning that danger may lurk, but where it lurks he never tells. If he would favour us with the information so that a reader of average intelligence could understand he would confer a benefit on mankind.

The assumption of a knowledge where there is no real knowledge is also evident in connexion with irregular heart action. Dr. Smith seriously tells us: "of irregularity and its effect or lack of effects, clinically, Clark and Sutton knew as much as we do now." If Dr. Smith means himself and men of his way of thinking he is probably right. This unjustifiable assumption of knowledge is typical of the older school. I remember about 20 years ago, when I was studying heart irregularities and had got a basis for differentiating some of them on physiological lines, I was engaged in working out their clinical significance. At that time there was advertised the forthcoming publication of a cyclopædia of medicine to which the leading English physicians were to contribute. I looked eagerly for the publication of the heart volume, for at that time I had no doubt that the great London physicians would be able to remove my keenly felt ignorance. Judge of my surprise when I got the volume to find that save for some incidental references the matter of heart irregularity was ignored. Considering the extraordinary frequency of irregular hearts among my patients, its association with health and varying degrees of ill-health, I was astonished, and so had the temerity to write a letter to the very distinguished physician who edited the cyclopædia, and who had himself contributed some of the heart articles, calling attention to the omission. Seeing what we now know of the great importance of a knowledge of irregular heart action, I always smile when I remember his reply, which was to this effect: "The significance of irregular heart action is a matter of common knowledge, and being so well known it was not considered necessary to deal with it in the cyclopædia." Is not this a delightful illustration of the academic mind, "What I don't know is not knowledge"!

It cannot be too strongly emphasised that our knowledge of the significance of murmurs is still wofully deficient. I have tried, indeed, to solve the problem, as others have done before me, but our united efforts still leave a great deal to be done. The lack of success has been in a great measure due to the fact that we do not possess the knowledge to enable us to interpret the significance of the signs. To ascertain the significance of murmurs actually caused by a valve defect we must know the life-history of the individual. Thus we must watch individual cases during the illness which caused the damage, we must watch him for the remainder of his life and note the gradual changes that ensue if the damaged valve leads to heart failure. We must realise wherein the danger lies—as, for instance, that the danger is really caused not by the damaged valve but by the heart muscle not being able to overcome successfully the embarrassment to its work caused by the damaged valve. This, then, calls for the recognition of the signs and symptoms evoked by the embarrassed muscle. These are extremely elusive and varied, as they include alterations in

the size and shape of the organ, variations in the rhythm and rate of the heart; while the impairment of the efficiency of the organ may be manifested in the altered function of other organs. Many of these phenomena have not yet been accurately recognised, and it is towards their elucidation that the more recent investigations are directed.

To illustrate the necessity for this line of research one has but to point out how limited is our knowledge of such well-marked murmurs as the presystolic mitral murmur and the aortic diastolic murmur. I have followed the above line of investigation in regard to the former and have dimly perceived the factors that enable me to assess the value of this murmur, but I am far from asserting that I have succeeded in completely solving the problem. I have attempted the solution of aortic regurgitation, but must confess myself baffled in accounting for the heart failure in many of these cases. I have seen the heart failure fatally precipitated by the onset of an abnormal rhythm as auricular fibrillation or auricular flutter, but there are many cases where heart failure sets suddenly in, without the occurrence of an abnormal rhythm, in a manner characteristic of no other condition. I am distinctly of opinion that in aortic regurgitation there occurs something in the heart peculiar to this condition which I cannot link up with the heart failure arising in other conditions. It will thus be seen that though we have made a little advance in our attempts to assess the value of murmurs much has yet to be done, and that those who fancy they know all about the matter imagine a vain thing.

Another great field of research that lies practically unexplored is the action of remedies. It is a curious fact that there is not a single drug employed by the profession whose action in the human body has been accurately observed. I know this statement will be strongly disputed, but I have only to point out how lamentably ignorant we are of the action of cardiac remedies to show the truth of the statement. I suppose there is no drug during the past 150 years that has been the subject of so much discussion as digitalis. Thousands of physicians have lectured upon its effects and numerous physiologists and pharmacologists have experimented with it, yet they have missed the fundamental principles governing its action. Some years ago I collected the records of all the cases to whom I had given digitalis for 10 years. When I analysed the results I was struck by the varied reaction to the drug. Many of these reactions were a puzzle to me, but continuing the investigation the matter gradually became clearer, and I found that the reaction in a great many cases varied with the nature of the disease present in the heart. Thus in one case heart-block would be produced, in another extra-systoles, in another auricular fibrillation, while in a great many the digitalis, though pushed to the furthest limits, seemed to have no effect upon the heart. Moreover, hearts affected by an abnormal rhythm responded differently; thus cases, with what now we know as auricular fibrillation, responded in one way, while others with auricular flutter reacted in another way.

To help to solve these peculiarities I searched diligently the literature, beginning with the original articles of Withering published in 1785. I searched the literature in the English, French, and German languages, and in the whole of this literature there was not recorded a single case where the condition of the heart was clearly detailed, and the reaction intelligently described. I mention this not to reflect upon the intelligence of the physicians of the past, but to show the necessity for a new conception in clinical investigation. This will be appreciated if I state briefly two main reasons for the failure of the past observers to find out the action of digitalis on the human heart. First, physicians were unable to recognise its effect because medical science had not advanced so far as to enable them to diagnose the heart condition, nor the abnormal rhythms which modified the action of digitalis. Second, experimentalists failed because they did not know that digitalis reacted according to the nature of the lesion with which the heart was affected, but assumed that the reaction they got in the healthy hearts of animals would be the same in the diseased human heart.

The true conception of clinical investigation should be to make the recognition of a new fact a step to further knowledge. This is, of course, recognised in theory, but it is not always put in practice. We have seen this in regard to Sir A. Clark's attitude to murmurs, and we see it in your correspondent, Dr. Poynton's, attitude to the discovery of the rheumatic microbe. It is now many years since he announced his discovery, and so far as I know he has done nothing with the discovery but to repeat the announcement. When I was a student, nearly 40 years ago, people were describing the discovery of the rheumatic microbe, and others have done the same thing since; but from that day to this no sufferers from rheumatic fever have derived the slightest benefit from the discovery, nor has the discovery added anything to our clinical knowledge. In place of being content with the announcement of the discovery, investigators should carry the matter further by studying out the life-history of the microbe—how it gets entry into the body, the signs of its earliest invasion, and how these signs differ from the effects of other morbific agents, its susceptibility to remedies, &c. Such are some of the lines that Dr. Poynton might have pursued. This instance illustrates the attitude of much bacteriological discovery, as many people, having recognised a microbe, do not know what to do with their discovery.

If I have succeeded in making my point clear, the need for a new conception in the investigation of disease will be realised. The conception I am advocating is not limited to the investigations of the circulatory system, but the principle must be applied to the symptoms produced by every organ in the body. This principle involves the careful perception of every symptom, subjective as well as objective, an investigation to find out the mechanism of its production, and the bearing that the cause of the symptom has on the individual's life-history. We have greatly benefited by the laborious and careful histological examination of the tissues in health and disease, we must now turn our attention to an equally careful investigation of the symptoms of disease. The methods employed differ widely, and as no trouble is spared to make a competent microscopist, no trouble should be spared to make a competent clinical observer.

In thus insisting upon new methods for clinical investigation it is not necessary to reflect in any way upon the older physicians. They did their work according to their lights, and we do ours according to our lights. The time will come when other ideas will supersede ours, and we must rejoice thereat, as it will be for the advance of knowledge. Nor must we neglect the investigators of the past, for the work they have done is invaluable, and if to-day we can make some progress it is because they have prepared the way. I am conscious of a great debt of gratitude which I owe to the great physicians of the past. I have been an earnest student of the writers of the past, Morgagni, John Hunter, Wilkinson King, Stokes, and the more recent writers, as Gairdner, Sutton, Broadbent, Balfour. I have a fairly comprehensive knowledge of the literature dealing with the circulatory system, and I am convinced that in no other language are the writers superior to those of these islands for breadth of outlook, philosophic thought, and sanity of judgment. It is ever a pleasure and an instruction to turn to the writings of the world's greatest clinical investigator, John Hunter. If anyone wishes to understand what clinical investigation is let him study the writings of this remarkable man, and then let him visit the College of Surgeons Museum, and if good fortune attends him get a chat with Arthur Keith.

I am, Sir, yours faithfully,

May 15th, 1917. J. MACKENZIE.

A RAPID METHOD OF OBTAINING ANAEROBIC SPORE-BEARERS IN PURE CULTURE.

To the Editor of THE LANCET.

SIR,—In your issue of May 12th Captain W. J. Wilson describes an easy method of obtaining plate cultures of anaerobes. As Miss Muriel Robertson suggests, however, in the *Journal of Pathology and Bacteriology*, and again in her letter to THE LANCET of May 19th, this is only the beginning of difficulties. Before proceeding to investigate a particular variety of spore-bearer isolated by the plate method it is of the utmost importance to determine its purity. That laboratory strains of *B. tetani*, hitherto regarded as pure, should, as Miss Robertson indicates, turn out to be a symbiotic mixture is further evidence of the need for the most careful verification of the purity of the organism as a preliminary to further work.

It is obvious that the usual laboratory method of repeated plating is not reliable. The ideal method would, of course,

be to raise a culture from a single cell. Such a method was introduced by Burri in which Indian ink is used as a dark ground for the bacteria. This particular method, however, is open to certain objections, one of which is the risk of contamination owing to the necessary exposure of the glass slips. Moreover, such a method demands considerable time and skill, the latter of which is not acquired in a day. Where time is a matter of some moment I would suggest the following alternative:—

An isolated colony or part of such a colony is picked off from the solid medium with a platinum needle, and a suspension of this material is made in one or two c.c. of sterile saline. An old colony is perhaps preferable where there is practically nothing left but spores. After vigorous shaking a sample of this suspension is transferred to a hæmocytometer stage, or preferably to a counting chamber such as has been devised by Professor Ernest Glynn for the numerical estimation of bacteria in vaccines. Having ascertained the number of spores or bacilli per c.c. in the suspension, it is an easy matter to make from this a dilution which will contain approximately one spore or one bacillus per unit of saline. When the desired dilution has been obtained, it is an easy matter to sow a series of meat or Hirnbrei tubes each with the unit volume of saline containing a single organism or spore. These are then incubated anaerobically, and thereafter examined as to their purity. If a sufficiently high dilution has been made there is every probability that a pure strain or strains will be secured.

The method is simple, does not take up much time, reduces the possibility of extraneous contamination to a minimum, and, short of raising a culture from a guaranteed single bacillus, as the ideal method would be, offers a very reasonable prospect of success.

I am, Sir, yours faithfully,

ROBERT DONALDSON,
Pathologist, Royal Berks Hospital.

Reading, May 20th, 1917.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

To the Editor of THE LANCET.

SIR,—In spite of the fact that a circular has been issued stating that the "National Committee for Relief in Belgium" is ceasing to take part in the relief of the suffering in Belgium, this Committee (The Belgian Doctors' and Pharmacists' Relief Fund), as the result of a letter received from "The Commission for Relief in Belgium," has decided to continue to send £800 a month to the Committee in Brussels. The letter contained the following words:—

"Every arrangement has been made to assure that the relief shall go on without interruption. Spanish and Dutch representatives will take the place of the Americans, and the actual handling of the relief cargoes, the distribution of money, &c., will be supervised by Belgian representatives of the Commission in a way which we feel confident will ensure the food and funds arriving at their proper destination. ..... I therefore hope that you will be able to continue the ..... contributions from your society as in the past. They have afforded great relief."

I am, Sir, yours faithfully,

H. A. DES VŒUX,
Honorary Treasurer.

14, Buckingham-gate, London, S.W. 1, May 23rd, 1917.

THE EXAMINATION OF THE BLOOD OF TYPHUS FEVER CASES BY DARK-GROUND ILLUMINATION.

To the Editor of THE LANCET.

SIR,—A few days after the publication of the letter sent to you by Dr. Georgina Darling and myself,[1] the examination of a large number of "controls" demonstrated that the spirochæte-like bodies found in the blood of typhus fever cases were also present in the blood of other patients, and even in that of healthy subjects. I am therefore in entire agreement with the remarks of Lieutenant-Colonel L. W. Harrison, R.A.M.C., in his letter of April 29th. I think Colonel Harrison has done good service in describing these "streamers," and in this way preventing others being deceived by them. I would have written earlier, but my sudden departure overseas prevented me.

I am, Sir, yours faithfully,

W. JAMES WILSON,
Captain, R.A.M.C. (T.F.).

B.E.F., May 20th, 1917.

[1] THE LANCET, April 14th, 1917, p. 589.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Appeal Pensions Tribunal.

THE two medical representatives on the tribunal which is to hear appeals from decisions awarding gratuities to sailors and soldiers discharged as medically unfit are Mr. BILTON POLLARD, of the Royal College of Surgeons, and Dr. NORMAN MOORE, of the Royal College of Physicians.

HOUSE OF COMMONS.

WEDNESDAY, MAY 16TH.

Medical Re-examinations.

Answering Mr. NEEDHAM, Mr. MACPHERSON (Under Secretary for War) said: Owing to the very great pressure on the medical boards it is impossible to set up at present a system of anticipatory medical examinations in connexion with the Military Service (Review of Exceptions) Act. It is hoped, however, as soon as may be, to afford facilities for men who desire to be medically examined in advance of the date on which, under the Act, they would be liable to be called up for re-examination, and where under such authorised anticipatory medical examination a man is found to be permanently and totally disabled for military service he will receive a final discharge in accordance with the provisions of the Act.

In reply to Mr. PENNEFATHER, Mr. MACPHERSON said: The Military Service (Review of Exceptions) Act, 1917, expressly defines the limits within which notices requiring re-examination are sent to discharged sailors and soldiers. In order to avoid error, the form of notice bears on the face of it a statement that it does not apply to any officer or man who has left or been discharged from the naval or military service of the Crown in consequence of disablement, if the disablement has been certified under the authority of the Admiralty or of the Army Council to be the result of wounds, including injury from poisonous gas, received in battle or in any engagement with the enemy or otherwise from the enemy, or in consequence of neurasthenia or any allied functional nerve disease, if so certified by a special medical board to be the result of naval or military service in the present war. For a man who considers that he falls within this exclusion a form of claim is printed on the back of the notice, which is to be returned to the recruiting officer in order that inquiries may be made.

THURSDAY, MAY 17TH.

Medical Examination of Female Prisoners.

Commander WEDGWOOD asked the Home Secretary what further steps had been taken in investigation of the Brentford case; and whether the magistrate who ordered the medical examination of two innocent women was still administering justice in the Brentford district.—Sir GEORGE CAVE replied: I have made inquiries into this case, and am informed that the magistrates did not order an examination of the two women referred to. The women were charged with disorderly behaviour, and the magistrates, after hearing part of the evidence, remanded them for inquiries, and endorsed upon the committal order a statement that the justices would be obliged by the opinion of the medical officer as to whether the women were suffering from disease. I have informed the magistrates that in my opinion this request should not have been made. In consequence of the magistrates' request the two women were medically examined at Holloway Prison, with the result that they were reported by the deputy medical officer to be free from disease. The prison medical officers have definite instructions that no woman is to be examined without her consent, and I am assured that in this case the necessary consents were obtained. On the hearing of the case being resumed, the magistrates dismissed the charge. It appears from the information given to me that no illegality was committed, but I desire to repeat that in my opinion there was no reason whatever why the magistrates should have asked for any opinion from the medical officer and I regret that the request was made.

Mr. LEIF JONES: Are prisoners made aware that they may refuse their consent to such examination?—Sir GEORGE CAVE: I understand that they are always told they may refuse.

Prisoners and Venereal Disease.

Answering Commander WEDGWOOD, who asked whether in a certain prison girls due for discharge were obliged to submit to a medical examination, and if found suffering from venereal disease were detained beyond their sentence, Sir GEORGE CAVE said: Under Statutory Rule 11 all prisoners must be examined before discharge. No prisoner is locally examined for venereal disease without consent. No prisoner

can legally be detained beyond the expiration of sentence and no prisoners are or have been so detained.

MONDAY, MAY 21ST.

Committee of Reference under Military Service Act.

Sir WILLIAM COLLINS asked the Under Secretary for War who were the members of the Committee of Reference of the Royal College of Physicians of London and the Royal College of Surgeons of England; whether it was appointed under Section 7 of the Military Service Act, 1916 (Session 2); by whom its members were selected; and with what powers and duties it had been entrusted.—Mr. MACPHERSON wrote in reply: The Committee of Reference is composed of the following: the chairman is the President of the Royal College of Physicians, and the members are four Fellows of the Royal College of Physicians, with the President and four Fellows of the Royal College of Surgeons. This committee was appointed under Section 7 of the Military Service Act, 1916 (Session 2), and the Military Service (Professional Committees Regulation) Order, 1916, as the Committee of Reference for Section 5 of these Regulations. The members were appointed by the Royal Colleges of Physicians and Surgeons and approved by the Army Council. Their powers and duties are contained in the Regulations mentioned.

Medical Students.

Mr. T. E. HARVEY asked the Under Secretary for War whether any further steps were to be taken to recall from the ranks medical students now serving in the Army with a view to their employment in medical and surgical work; and whether, in view of the need for additional doctors and surgeons, arrangements could be made for the employment of advanced medical students in responsible work in the Royal Army Medical Corps and military hospitals similar to that of surgeon probationers in the Navy.—Mr. MACPHERSON answered: Fourth and fifth years' students can be released, if serving, to continue their studies. Their employment with the Army is not considered desirable, as it is thought better to wait until they can be commissioned as medical officers.

Military Hospital Huts at Cromarty.

Mr. MORTON asked the Under Secretary for War whether any of the military hospital huts at Cromarty were to be used as a hospital for the treatment of venereal disease; and, if so, would he have the matter fully inquired into and further considered before anything of the sort was allowed.—Mr. MACPHERSON replied: This matter is now being considered.

Voluntary Aid Hospitals.

Sir WILLIAM COLLINS asked the Financial Secretary to the War Office whether any, and if any what, grants were made to voluntary aid hospitals in respect of medical services rendered by civilian medical men, and what were the conditions regulating any such grants.—Mr. FORSTER wrote in reply: Very large numbers of civilian medical men have rendered, and are rendering, such services gratuitously, and services so rendered the War Office gratefully receives. If a civilian doctor in the exercise of his own discretion sees fit to claim payment for his services, the General Officer Commanding has power under the War Office instructions to allow suitable remuneration, having in view the circumstances of each case, and in that case the grant to the hospital in question is increased by an equivalent amount.

WEDNESDAY, MAY 23RD.

Promotions in the R.A.M.C. (Territorial Force).

Mr. LYNCH asked the Under Secretary for War (1) whether, notwithstanding that a field ambulance of the Territorial Forces was a definite unit even in peace time and its establishment was laid down as consisting of a lieutenant-colonel, two majors, and others, promotions to these posts were being withheld for long periods although suitable men were recommended for them, and, if so, whether this state of affairs would be remedied; (2) whether vacancies on the medical staffs of field ambulances of the Territorial Forces were frequently filled by promoting officers of the Royal Army Medical Corps (Regular Forces), to the exclusion of Territorial officers of longer service, notwithstanding that such officers had been recommended for promotion by their commanding officers; and whether, in fairness to medical men who gave their services to the Territorial Force before the war, promotions would be regulated by considerations of merit and of work performed; and (3) whether all applications for promotion made on behalf of medical officers of the Territorial Forces who joined prior to the outbreak of war were now refused on the plea that promotions in the Royal Army Medical Corps were in abeyance; and whether steps would be taken to facilitate promotions which had been earned by long and faithful service.—Mr. MACPHERSON replied: It is not the fact that all promotions in the Royal Army Medical Corps (Territorial Force) are refused on the grounds stated. When suitable officers with the requisite qualifications, service, and experience are available, promotions are made. Only when such officers are not available for command are regular or temporary officers of the Royal Army Medical Corps brought in. Promotion in the Royal Army Medical Corps (Territorial Force) is now under consideration by the committee of which the Member for Dundee (Mr. Churchill) is chairman.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BRADBURNE, A. A., F.R.C.S. Eng., has been appointed Honorary Ophthalmic Surgeon to the Victoria Memorial Hospital, Manchester.

LLOYD, E. LEWYS, County Medical Officer of Health and School Medical Officer for Merioneth.

MCKINNEY, W. B., Medical Officer of Lisnaskea Dispensary District and Union Hospital *pro tem.*

NORMAN, HUBERT J., M.B., Ch.B. Edin., D.P.H., Lecturer on Mental Diseases at the Westminster Hospital.

To be Certifying Surgeons under the Factory and Workshop Acts: DYSON, F. A. S., L.R.C.P. Lond., M.R.C.S. (Grosmont District of the county of Yorks, North Riding); JAMES, S., L.R.C.P. Lond., M.R.C.S. (Brynamman District of the county of Carmarthen); JONES, R. F., L.R.C.P. Lond., M.R.C.S. (Tamworth District of the county of Stafford); O'CLERY, L., M.D., M.Ch. R.U.I. (Clonakilty District of the county of Cork).

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ANGLO-RUSSIAN HOSPITALS.—Surgeons.

BETHNAL GREEN, METROPOLITAN BOROUGH OF.—Female Assistant Medical Officer of Health. Salary £350 per annum.

BIRMINGHAM CITY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £300 per annum.

BRISTOL GENERAL HOSPITAL.—Casualty House Surgeon. Salary at rate of £175 per annum, with board, &c.

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—Female House Physician. Salary £150 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

BURNLEY, VICTORIA HOSPITAL.—House Surgeon. Salary £160 per annum, with board, &c.

CAPE TOWN, SOUTH AFRICAN COLLEGE.—Professors of Pharmacology, Pathology, and Bacteriology. Salary at rate of £800 per annum each.

CARDIFF, KING EDWARD VII.'S HOSPITAL.—House Surgeon for six months. Salary at rate of £175 per annum, with board, &c.

CHARING CROSS HOSPITAL, W.C.—Honorary Anæsthetist.

CHESTER ROYAL INFIRMARY.—Assistant House Surgeon. Salary £150 per annum, with board, &c.

DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board, &c.

EDINBURGH ROYAL ASYLUM, Morningside.—Temporary Assistant Physician. Salary £365 per annum, with board, &c.

EVELINA HOSPITAL FOR CHILDREN, Southwark, S.E.—House Physician for four months. Salary at rate of £160 per annum, with board, &c.

GRIMSBY AND DISTRICT HOSPITAL.—House Surgeon. Salary £5 5*s.* per week, with board, &c.

ITALIAN HOSPITAL, Queen-square, London, W.C.—House Surgeon for six months. Salary £80 per annum, with board, &c.

LABORATORIES OF PATHOLOGY AND PUBLIC HEALTH, 38, New Cavendish-street, W.—Bacteriologist.

LANCASTER COUNTY ASYLUM.—Temporary Assistant Medical Officer. Salary 7 guineas per week, with board, &c.

LEEDS PUBLIC DISPENSARY.—Resident Medical Officer. Salary £200 per annum, with board, &c.

LEICESTER EDUCATION COMMITTEE.—Two Assistant School Medical Officers (Temporary). Salary £300 per annum.

MANCHESTER, ANCOATS HOSPITAL.—House Physician. Salary £200 per annum, with board, &c.

MANCHESTER, BAGULEY SANATORIUM FOR TUBERCULOSIS.—First Assistant Medical Officer, unmarried. Salary £400 per annum, with board, &c.

NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY.—Resident Medical Officer. Salary as arranged, with board, &c.,

NEW HOSPITAL FOR WOMEN, Euston-road, N.W.—Female Assistant Physician and Assistant Surgeon. Also House Physician, Obstetric Assistant. Two House Surgeons. Salary £50 per annum, with board, &c. Also Resident Medical Officer at House of Recovery, New Barnet. Salary £60 per annum.

NOTTS EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £350 per annum.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—District Resident Medical Officer for four months. Salary at rate of £60 per annum, with board, &c. Also Pathologist and Registrar. Salary at rate of £80 per annum, with lunch.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford.—Casualty Officer.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Temporary Assistant Physicians on Monday and Wednesday afternoons and Wednesday mornings for Out-patient Work. Salary £25 per annum, with lunch. Also House Physician, Casualty House Surgeon, and House Surgeon for six months. Salary £100 per annum, with board, &c.

ST. BARTHOLOMEW'S HOSPITAL, SPECIAL DEPARTMENT FOR THE DIAGNOSIS AND TREATMENT OF VENEREAL DISEASES.—Chief Assistant. Salary £500 per annum.

ST. HELENS COUNTY BOROUGH.—Temporary Assistant Medical Officer of Health. Salary £350 per annum.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN, GYNÆCOLOGICAL AND MATERNITY DEPARTMENTS.—Junior Female House Surgeon, unmarried. Salary £200 per annum, with board, &c.

SHEFFIELD ROYAL HOSPITAL.—Casualty Officer. Salary £130 per annum. Assistant House Surgeon. Salary £120 per annum, with board, &c.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c.

SOUTH LONDON HOSPITAL FOR WOMEN, South Side, Clapham Common, S.W.—Female House Surgeon for six months. Salary at rate of £100 per annum, with board, &c.

STOCKPORT, COUNTY BOROUGH EDUCATION COMMITTEE.—School Medical Officer. Salary £300 per annum.

SWANSEA EDUCATION COMMITTEE.—Female Assistant School Medical Officer. Salary £300 per annum.

TAUNTON AND SOMERSET HOSPITAL.—Senior House Surgeon. Salary £250 per annum, with board, &c.

WORCESTER, KING EDWARD VII. MEMORIAL SANATORIUM, Knightwick, near Worcester.—Temporary Medical Superintendent and Tuberculosis Officer. Salary £450 per annum, with board, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Cavan and at Totnes.

Births, Marriages, and Deaths.

BIRTHS.

ALTOUNYAN.—On May 16th, at High-street, Hampstead, the wife of Lieut. E. H. R. Altounyan, R.A.M.C.—a daughter.

BAILEY.—On May 21st, at Bracondale, Stockport, the wife of Lieutenant J. T. Bailey, R.A.M.C., of a daughter.

HAYDON.—At St. Denys, 52, Hermitage-lane, Platt's-lane, Hampstead, the wife of Arthur Haydon, M.D., F.R.G.S., of a son.

HOLROYDE.—On May 17th, at Barnsley, Yorks, the wife of Douglas Holroyde, M.A., M.B., B.C., of a son.

LANDMAN.—On May 15th, at The Towers, Roundhay, Leeds, the wife of Dr. Julian Landman, of a daughter.

MCKAY.—On the 9th instant, at Streatham, to Annie and Robert McKay—a son.

POWELL.—On May 12th, at a nursing home, Sheffield, the wife of Ievan Herbert Powell, M.B., Ch.B. Dub., of a son.

RIDDOCH.—On May 15th, at Devonshire-street, W., the wife of George Riddoch, M.D., R.A.M.C., of a son.

MARRIAGES.

FRASER—CHARD.—On May 15th, at Chichester, Major Alexander Edward Gordon Fraser, R.A.M.C., to Dorothy Louise Josephine, elder daughter of the late R. A. S. Chard, of Magnolia, West Tarring, Worthing.

JONES—FREEMAN.—On May 12th, at St. Peter's, Chertsey, Captain Arthur Beresford Jones, R.A.M.C., to Evelyn A., youngest daughter of Mr. and Mrs. Herbert L. Freeman, Burwood House, Chertsey.

NASMYTH—MAUDE.—On April 19th, at Salonica, Lieutenant Hugh Nasmyth, A.S.C., to Dorothea C. Maude, M.D.

SHAW—WILLANS.—On May 18th, at St. Mary's Church, Bedford, Captain Townsend Shaw (late I.M.S.), R.A.M.C., to Eva Jeune, daughter of the late Dr. W. B. Willans, Much Hadham, Herts, and of Mrs. Willans, Woburn-road, Bedford.

DEATHS.

BREW.—On May 16th, at his residence, Chew Magna, Bristol, Richard Hugh Brew, L.R.C.P. & S. Edin., aged 55.

BURTON.—On May 12th, of wounds received in action the same day, Percy Herbert Burton, M.R.C.S., L.R.C.P. (London Hospital), Captain, R.A.M.C., attached London Regiment, in his 50th year.

KIND.—On May 3rd, from gas poisoning in action, Robert Gordon Kind, R.A.M.C., aged 28.

LE PAGE.—On Sunday, May 13th, 1917, at Millmount, Guernsey, Dr. Wm. Le Page, L.R.C.P., L.F.P.S., L.S.A., aged 75 years.

PHILBRICK.—On May 14th, in India, John Harold Philbrick, M.B. Cantab., aged 42.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Professor W. J. R. Simpson, C.M.G., has been appointed Chief Medical Officer to the Serbian Relief Fund hospital unit.

CHILDREN'S HOSPITAL FOR HIP DISEASE, SEVENOAKS.—As a memorial to the late Miss Emily Jackson, who founded the Children's Hospital for Hip Disease, Sevenoaks, a fund has been started for the purpose of purchasing a piece of land adjacent to the hospital. Donations should be sent to the honorary treasurers.

Notes, Short Comments, and Answers to Correspondents.

MEDICAL MEN DURING BURNAND'S EARLIER PERIOD ON *PUNCH*.

STUDENTS of medical history are doubtless familiar with *Punch's* treatment of the theme of medical men. These from early days in all countries have been subjects of satire, but *Punch* was perhaps the first satirist to begin showing them a certain respect. Under the editorship of the late Sir Francis Burnand, which began in 1880 and covered most of the Keene and Du Maurier period, we get a change in *Punch's* treatment of what is popularly called "the doctor." In December, 1880, Du Maurier's drawing appeared of the senior surgeon being warned by the nurse, who, with uplifted forefinger, exclaims, "You cannot enter now, Sir George. We are just going to have evensong!" The picture of the eminent surgeon is admirable and complimentary, and our sympathies are with him in a difficulty which might occur to-day. Earlier in the same year, when Tom Taylor was perhaps still editor, the medical jokes are of the old type—not ill-natured, that is to say, but not exactly eulogistic of the profession. Even in the same number of *Punch* (Dec. 18th) there is an Irish medical referee, also drawn by Du Maurier, who talks with a broad brogue and humorously refuses to pass a candidate for a policy on the ground that he owns land in Ireland. In October of the same year two monthly nurses, drawn by Charles Keene, are discussing a baby. "'Well, Nuss,' sez he, 'igh and 'orty like, he sez, 'Wot do you think?' sez he. 'Doctor,' I sez, quite differential, I sez, 'I'm quite of your opinion,' I sez. 'And I'm of the same way of thinking, Nuss,' sez he. And so we settles it." And the Professional Friend, the other monthly nurse, asks with much interest, "Lor'! and wot was his opinion, now?" "Bless yer 'art, my dear Creetur, in course *he never hadn't given none!*" Another of Charles Keene's admirably drawn medical sketches depicts the doctor being told by an old lady, to whom he had spoken about the advisability of tapping, "Oh, Doctor, don't say that! Nothing was ever tapped in this house that lasted over a week!!" The doctor here is depicted as a rather stodgy old individual. In March Keene draws a genial absurd elderly gentleman, who is waving his hat to an equally absurd old lady of the period. "My dear Madam," says the medical gentleman, "always live on gravel." But the old lady is sure she could not digest it.

Going backwards a few years, we find a joke not quite creditable to the profession, although genial in the manner of the time. Charles Keene depicts Dr. Jolliboy, "who had been called away from a social meeting at his club," in the act of feeling an old gentleman's pulse. "Thirteen, fourteen, f'fteen-two, f'fteen-four, f'fteen-six—pair eight—nob'sh nine," says Dr. Jolliboy, and then "drops off," and Mr. Punch draws a veil, &c. This is in the *Punch's Almanack* for 1874. In November, 1875, a "Struggling Young Physician," well indicated by Du Maurier, tells the manservant to take Mr. Gladstone into the breakfast-room when he calls and to "ask him to be so kind as to wait a little while." Then turning to his lady patient the struggling medical man says: "Now, Madam!"

In 1863, when Burnand joined the staff of *Punch*, the medical jests—we speak always of illustrations only—depict astute formal old fellows, dressed for a part, as it were, with high Gladstone collars, stocks, coats representing a cross between evening dress and the frock coat, glossy top-hats, always carried into the sick-room, and double eye-glasses hung on a thick ribbon. "There is not much the matter with him," says a quaint "family doctor" in reference to a little boy, "but I am afraid we must cut off his animal aliment." And Tommy boo-boos and hopes that "it won't hurt." Here, of course, is the ancient tradition involved in the "we" and the grand unusual phrase.

THE ECONOMICAL USE OF COCAINE.

To the Editor of THE LANCET.

SIR,—In view of the present high price of cocaine, it is important to avoid waste in its use. As usually employed for local anæsthetic purposes, it is applied in solution on lint or cotton-wool, a considerable proportion remaining on the latter and being thereby wasted. Moreover, solutions of the drug, if they have been long made, are untrustworthy, and not infrequently have to be discarded. For some years I have used glycerine of starch as a vehicle for the local application of cocaine and with entire satisfaction, and can recommend it as the most economical. It has the following good points.

1. It keeps indefinitely. Does not evaporate, and consequently does not dry up. I have by me the remains of a supply made five years ago and it is as active as ever.
2. It can be applied to skin or mucous membrane without wool or lint. Simply spread it over the surface as thickly or thinly as desired.
3. It is very absorbable.
4. It can be prepared in any strength, cocaine being soluble in glycerine of starch in practically any proportion.
5. It is as convenient to handle as an ointment, but without the latter's greasiness.

By cocaine I mean, of course, the hydrochloride. The alkaloid itself is insoluble in glycerine preparations.

I am, Sir, yours faithfully,

Bournemouth, May 13th, 1917. J. T. HALL, L.D.S.

VITAL STATISTICS OF NYASALAND.

AN official report on Nyasaland for the year 1915-16 has just been presented to Parliament by the Colonial Office. From this it appears that the native population is estimated at 1,137,572, being approximately 505,121 males and 632,451 females. The number of European residents in the Protectorate, comprising officials and non-officials, during the year was 523 males and 262 females—total 785—and the Asiatic population amounted to 379. Amongst the Europeans 13 marriages were celebrated; the birth-rate was 26·75 and the death-rate 16·56 per mille.

The public health of the Protectorate was not altogether satisfactory during the year. An epidemic of small-pox broke out in the Lilongwe and Dowa districts, and out of 3535 cases there were 941 deaths. There were 29 cases of sleeping sickness recorded (principally in the proclaimed area of the Dowa district), as against 39 in 1914, 64 in 1913, 46 in 1912, and 38 in 1911. There were 621 cases of malaria, as compared with 729 in the previous year. As regards other mosquito or insect-borne diseases, there were 2 cases of blackwater fever and 29 of trypanosomiasis. In a special note on the European officials, it is stated that 10 were invalided, as against 7 in the previous year. There were 188 cases treated, with one death, as against 151 cases and no death in the previous year. Malaria accounted for 41 of the total admissions, or 22 per cent. Amongst the general European population there were 300 cases treated in 1915, as against 240 in 1914, the principal diseases in order of frequency being malaria, local injuries, and diarrhœa. These statistics do not include cases treated by Mission doctors.

STRETCHER-BEARING.

To the Editor of THE LANCET.

SIR,—As one deeply interested in the welfare of our wounded soldiers, I beg to call your attention to the dangerous practice of carrying seriously wounded men on stretchers *shoulder-high* prevailing at the front. In all cinema war-films the Hun prisoners engaged in carrying our poor wounded are shown doing so in this manner, which is decidedly wrong and very trying to the patient.

Is it not the case that General Stonewall Jackson, after being wounded, came to his death from a fall from a stretcher carried shoulder-high through one of his bearers being shot? The proper way to carry a patient on a stretcher is at full length of the arm.

I am, Sir, yours faithfully,

A. MACLURE,

West Hampstead, May 14th, 1917. Major, late London Scottish.

*** The carrying of the loaded stretcher shoulder-high can only be justified by exigencies of space. Strain on the bearers' arms should be avoided by shoulder-slings.—ED.L.

THE WOUNDED ALLIES RELIEF COMMITTEE.

THE Wounded Allies Relief Committee has removed from Grosvenor-gardens, and the headquarters of the organisation are now at Bank Chambers, 329, High Holborn, W.C. 1.

X.—Many kinds of depilatories have been used, generally containing a sulphide of an alkali or alkaline earth. Electrolysis affords good results in the hands of an expert. The necessity for depilation may be avoided by rendering the hairs less conspicuous by means of peroxide of hydrogen.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, May 23rd, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
May 17	0·16	60	53	45	46	47	Raining
,, 18	0·53	95	65	47	52	53	Cloudy
,, 19	0·06	85	63	53	59	61	Cloudy
,, 20	0·18	109	69	53	56	57	Cloudy
,, 21	0·86	101	68	56	59	59	Overcast
,, 22	0·02	113	71	55	56	57	Cloudy
,, 23	...	118	72	56	60	64	Fine

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

Medical Diary for the ensuing Week.

SOCIETIES.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY.—8.30 P.M., Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—Hospital closed.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. B. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. B. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTE OF PUBLIC HEALTH, Lecture Hall of the Institute, 37, Russell-square, W.C. 1.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—

WEDNESDAY.—4 P.M., Lecture VII.:—Dr. A. E. Shipley: Health and Insect Life in War and Peace. Followed by a discussion.

The following journals, magazines, &c. have been received:—Cleveland Medical Journal, Duodecim, British Dental Journal, Military Surgeon, British Journal of Dental Science, British Journal of Surgery, Annales de Médecine, Hospital Gazette, American Journal of Medical Sciences, Interstate Medical Journal, Medical Officer, Therapeutic Gazette, Archives of Pediatrics, Medical Journal of South Africa, Medical Times.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C. 2.

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ALTERATION IN THE PRICE OF "THE LANCET."

INCREASED war expenses and cost of production necessitate an increase of the price of THE LANCET. Commencing with the new year, the price was raised to 8d. The rates of subscription remain as revised in October.

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